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Michigan Slavic Materials, 58

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

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*The Second  
MIT Meeting  
2011*

edited by  
Alexander Podobryaev

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In memory of  
Maria Babyonysheva



The articles in this volume arose from papers given at the Twentieth Workshop on Formal Approaches to Slavic Linguistics, which was held at the Massachusetts Institute of Technology, Cambridge, MA, May 13–15, 2011.

This was a special meeting since MIT was a host of FASL as early as in 1993, when the second FASL conference was held here. It was gratifying to see that the interest in the present meeting was as enthusiastic as nearly twenty years ago. As was the case in 1993, the event would not have been possible without generous institutional support. The organizers are grateful to the MIT Linguistics Department for significant support and logistic help. They also thank department students and faculty, as well as the reviewers, too numerous to be listed here, for their dedicated work.

As has been common in the past, the program included several invited speakers. This time invitations went to Morris Halle, Ivona Kučerová, Donca Steriade, and Sergei Tatevosov. The organizers are grateful to Noam Chomsky for introducing Morris Halle's lecture.

During the meeting the participants formally honored the work of Maria Babyonyshev. She was among the organizers of the 1993 MIT meeting and then she subsequently was one of the most active FASL participants, giving presentations at no less than six later meetings. The FASL community mourns her untimely passing.

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## **Case Alternation and Event Structure: Evidence from Russian and Lithuanian \***

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Princeton University

### **1. Introduction**

In this paper, I will describe accusative-instrumental case alternations that defy case theory, and show that morphological case can reflect the event structure of a verb, namely the presence or absence of a result.

Russian and Lithuanian share two particular usages of instrumental case: with verbs of moving body parts and with verbs of making sound.

- (1) a. Anna požala \*pleči/✓plečami *Russian*  
Anna shrugged shoulders\*<sub>ACC/✓INST</sub>  
'Anna shrugged her shoulders'  
b. Anna skreščivala nogi/\*nogami  
Anna crossed legs<sub>ACC/\*INST</sub>  
'Anna crossed her legs'  
c. Okhrannik brenčal \*ključi/✓ključami  
guard jingled keys\*<sub>ACC/✓INST</sub>  
'The guard jingled the keys'

---

\* Thanks to native speakers for their help with the data: Peter Arkadiev (Russian), Artūras Judžentis, Rolandas Mikulskas, Žydrune Mladineo, and Martynas Vasiliauskas (Lithuanian). Thanks also to the audiences at FASL 20 and the Syntax Supper at CUNY (August 2011) and anonymous reviewers for their feedback. The usual disclaimers apply.

- d. Ključī/\*ključami brenčali v karmane  
 keys<sub>NOM/\*INST</sub> jingled in pocket  
 ‘The keys jingled in the pocket’
- (2) a. Ona traukė pečius/pečiais *Lithuanian*  
 Ona shrugged shoulders<sub>ACC/INST</sub>  
 ‘Ona shrugged her shoulders’
- b. Ona sukrižiavo kojas/\*kojomis  
 Ona crossed legs<sub>ACC/\*INST</sub>  
 ‘Ona crossed her legs’
- c. Apsaugininkas žvang-in-o raktus/raktais  
 guard jingle-CAUS-PST keys<sub>ACC/INST</sub>  
 ‘The guard jingled the keys’
- d. Raktai/\*raktais žvangėjo/\*žvang-in-o kišinyje  
 keys<sub>NOM/\*INST</sub> jingled/\*jingle-CAUS-PST pocket<sub>LOC</sub>  
 ‘The keys jingled in the pocket’

For verbs of moving body parts, where Russian allows only instrumental, Lithuanian allows either case (Ambrzas 2007). For verbs of making sound, Lithuanian has two types of verbs: causative, as in (2c) and non-causative, in (2d). Only the causative allows the alternation. There is a subtle difference in meaning: the accusative indicates the object (body part, source of sound) is an affected patient rather than a means for performing the action (cf. Šukys 2005, Letuchiy 2007).

These case alternations are problematic for current views of argument structure and case theory because there is no apparent structural difference between the accusative and instrumental: the form of the verb does not change, and there is no difference in word order.

I will show that the difference in morphological case can be accounted for under a decompositional verb phrase analysis, in which the event structure is represented syntactically. Crucially, it is a difference in the event structure that corresponds to a difference in case marking.

In the next section, I will discuss the case alternation data in Russian and Lithuanian. In section 3, I will review the previous approaches that connect case to event structure, and a similar case alternation in Icelandic. In section 4, I give my proposal for how a difference in morphological case can have a different syntactic structure.

## 2. Case Alternations

### 2.1 Verbs with Body Part

Many verbs in Russian that take a body part as the internal argument license instrumental on that argument, as in (3).

- (3) a. makhat' rukoj/\*ruku  
to-wave hand<sub>INST/\*ACC</sub>  
b. kivat' golovoj/\*golovu  
to-nod head<sub>INST/\*ACC</sub>  
c. požat' plečami/\*pleči  
to-shrug shoulders<sub>INST/\*ACC</sub>  
d. dvigat' ušami/\*uši  
to-move ears<sub>INST/\*ACC</sub>

However, the instrumental is not a lexical requirement on the verb: if a different type of argument is used, accusative<sup>1</sup> is allowed, as in (4):

- (4) dvigat' mebel'/\*mebel'ju  
to-move furniture<sub>ACC/\*INST</sub>

The instrumental is also not an instance of differential object marking, based on the semantic class of the object, as not all body parts are always marked with instrumental, shown by the verbs in (5) which license accusative on the body part object. Crucially, these verbs involve an inherent change in state or position of the body part.

- (5) a. otkryt' glaza/\*glazami  
to-open eyes<sub>ACC/\*INST</sub>

---

<sup>1</sup> Demjjanow & Strigin 2000 give the following instance of instrumental with this verb:

- (i) a. dvigat' stul  
to-move chair<sub>ACC</sub>  
b. dvigat' stulom  
to-move chair<sub>INST</sub>

They suggest that the difference between (a) and (b) is that (b) implies that the subject is sitting in the chair and moving around in it. Other native speakers claim that (b) can only mean that the subject is moving something else with the chair.

- b. skreščivat' nogi/\*nogami  
to-cross legs<sub>ACC/\*INST</sub>

Rather, it seems that the use of instrumental or accusative comes from an interaction of verb and argument, not a property of either individually:

- (6) ...skhvatila bližajšij stul, podtjanula ego k sebe i stala dvigat' **im** po polu, slegka podtalkivaja mjač ego nožkami.  
'...grabbed the closest chair, pulled it towards her and started to move **it**<sub>INST</sub> around the floor, gently pushing the ball with its legs.'  
(Viktor Pelevin, "Zigmund v Kafē")

Furthermore, the use of accusative with verbs of moving body parts has difference in meaning from the instrumental. Accusative indicates that the body part is affected by action (cf. Wierzbicka 1980 pp. 24-7). In (7), the accusative is possible, though unusual, to emphasize the change in position of the body part.

- (7) Provesti **jazyk** vpered meždu perednimi verkhnimi zubami i verkhnej guboj i vesti k soedineniju pravoj verkhnej desni i vnutrennej časti pravoj ščeki...  
"Draw your **tongue**<sub>ACC</sub> forward between the front upper teeth and the upper lip, and draw it as to unite the right, front gum and the inside part of the right cheek"  
([http://kopilkanm.ru/comment\\_1283453886.html](http://kopilkanm.ru/comment_1283453886.html))

This is also supported by Letuchiy 2007. He uses the distinction made by Levin & Rappaport Hovav 2005 between verbs of result and verbs of means. Accusative case is allowed with verbs of result, whereas verbs of means have instrumental marked on the body part.

Lithuanian shows similar case marking patterns to Russian, but with more flexibility. Both instrumental and accusative are allowed in instances where Russian only allows instrumental, as in (8):

- (8) a. linguoti galva/galvą  
shake head<sub>INST/ACC</sub>  
b. karpyti ausimis/ausis  
move ears<sub>INST/ACC</sub>

- c. griežti dantimis/dantis  
gnash teeth<sub>INST/ACC</sub>
- d. traukyti pečiais/pečius  
shrug shoulders<sub>INST/ACC</sub>
- e. vizginti uodega/uodegą  
wag tail<sub>INST/ACC</sub>
- [from Ambrazas 2007:513]

Ambrazas claims many verbs can have either case, but speaker judgments vary (some prefer instrumental, others prefer accusative). Instrumental is generally preferred for gestures or automatic physical responses (chattering of teeth). Only accusative is acceptable if the body part is being controlled in some way (e.g. in order to exercise), or the focus is on the change of position. This is exemplified in (9), where only accusative is possible:

- (9) Trauky-k pečius/\*pečiais iki ausų.  
shrug-IMPV shoulders<sub>ACC/\*INST</sub> to ears  
'Shrug your shoulders up to your ears.'

Thus, if the body part is affected or its position changed<sup>2</sup>, accusative is possible. If not, then instrumental is preferred. This is also what is found for Russian; the verbs in (5) involve a change of the body part, whereas the verbs in (4) involve the body part as a means for performing the action. Lithuanian is more flexible in which verbs allow accusative, but require the difference in meaning.

## 2.2 Verbs of Sound

Verbs of sound show an argument structure alternation in both Russian and Lithuanian. The source of the sound is either the subject, and marked with nominative case, in (10a,c), or an internal argument and marked with instrumental case, in (10b,d).

- (10) a. Gremit posuda. *Russian*  
rattle dishes<sub>NOM</sub>  
'The dishes are rattling.'

<sup>2</sup> An additional semantic component here, as pointed out by an anonymous review, is likely the volitionality of the speaker, which is another property of Proto-Patients.

- b. Ženščina gremit posudoj.  
 woman rattles dishes<sub>INST</sub>  
 ‘The woman rattles the dishes.’
- c. Barška indai.  
 rattle dishes<sub>NOM</sub>  
 ‘The dishes are rattling.’
- d. Moteris barška indais.  
 woman rattles dishes<sub>INST</sub>  
 ‘The woman rattles the dishes.’

*Lithuanian*

Paducheva 1998 points out that this sort of “diathetic shift”, in which an internal argument becomes a subject, is unusual in Russian, without the reflexive suffix *-sja*, as in (11b). It is possible with instruments, however, without the reflexive suffix, shown in (12).

- (11) a. Ivan otkryvaet dver’.  
 Ivan opens door<sub>ACC</sub>  
 ‘Ivan opens the door.’
- b. Dver’ otkryvaet\*(sja).  
 door:<sub>NOM</sub> opens<sub>(REFL)</sub>  
 ‘The door opens.’
- (12) a. Ivan napolnil jamu vodoj.  
 Ivan filled pit<sub>ACC</sub> water<sub>INST</sub>  
 ‘Ivan filled the pit with water.’
- b. Jama napolnila\*(s’) (vodoj).  
 pit<sub>NOM</sub> filled<sub>\*(REFL)</sub> (water<sub>INST</sub>)  
 ‘The pit filled with water.’
- c. Voda napolnila jamu.  
 water<sub>NOM</sub> filled pit<sub>ACC</sub>  
 ‘The water filled the pit.’  
 [adapted from Babby 1998]

While Lithuanian does not have as many verbs with the reflexive alternation shown in (11) for Russian, the same conclusion holds for both

languages: the source of the sound is not a direct internal argument<sup>3</sup>, but functions like a true instrument: the means of performing the action.

In addition to the verbs described above, Lithuanian has another form of these verbs, which have the (historically) causative suffix *-(d)y-/(d)-in-*. These suffixed verbs are never intransitive, as in (13).

- (13) a. *Moteris baršk-in-a indais.*  
 woman rattle-CAUS-PRES dishes<sub>INST</sub>  
 ‘The woman rattles the dishes.’  
 b. \**Indai baršk-in-a.*  
 dishes<sub>NOM</sub> rattle-CAUS-PRES  
 Intended: ‘The dishes are rattling.’

These suffixed verbs allow either accusative or instrumental on the source of the sound, as the examples in (14) show:

- (14) a. *Poetas, baršk-in-damas rašomąja mašinėle, atsakė:*  
 poet rattling-CAUS-PRT writing machine<sub>INST</sub> answered-  
*Palauk minutėlę.*  
 wait.IMPV minute<sub>ACC</sub>  
 ‘The poet, rattling at the typewriter, replied “Wait a minute”.’  
 b. *Mortūnienė liaujasi baršk-in-usi indus*  
 Mortuniene stopped rattling-CAUS-PRT dishes<sub>ACC</sub>  
 ‘Mortuniene stopped rattling the dishes.’  
 [from the Lithuanian online corpus]

The difference in meaning for (14a) and (14b) is subtle, but native speakers have suggested that the accusative implies action upon the object, and the instrumental is used when making a sound that involves the object, e.g. playing an instrument. This alternation, like that with body parts, can also be categorized as involving a distinction in affectedness, with the accusative corresponding to a higher degree of affectedness.

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<sup>3</sup> In fact, it may be more of an adjunct than an argument (Rok Žaucer, p.c.)

### 3. Case and event structure

#### 3.1 Transitivity and Patienthood

Kittilä 2009 proposes that accusative case is usually a marker of (prototypical) transitivity. Other case frames (e.g. nominative-instrumental) are associated with decreased transitivity, especially absent any verbal morphology associated with the change.

These case alternations reflect a higher degree of transitivity when accusative case is used: the internal argument is more affected, or perceived to undergo a change of position. This difference corresponds with Dowty's (1991) theory of Proto-Roles<sup>4</sup>, in lieu of the traditional theta roles. He claims that the argument with the most features of a prototypical patient will surface as the direct internal argument. These features (Dowty 1991:572) are given in (15):

- (15) Contributing properties for the Patient Proto-Role:
- a. undergoes a change of state (coming into or going out of existence)
  - b. incremental theme
  - c. causally affected by another participant in the event
  - d. stationary relative to movement of another participant
  - (e. does not exist independently of the event, or at all)

For verbs with multiple internal arguments, one may be the direct internal argument if it is a better candidate for the Patient Proto-Role, which accounts for the difference in meaning in *spray/load* alternations. The case alternations at hand appear to engage in a similar argument structure alternation to such predicates as *spray* and *load*, with the crucial difference that there is only one internal argument (Anderson 2011). The accusative case is possible when the argument is interpreted as undergoing a change of state, or position, or when causally affected by the agent.

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<sup>4</sup> Thanks to an anonymous reviewer at Baltic Linguistics who suggested this reference for this set of data.

### 3.2 Icelandic case alternations (Svenonius 2002)

One possible approach to the alternations under investigation is to extend the Svenonius' (2002) analysis of Icelandic case alternations. He argues that case on NPs is a reflection of (interpretable) tense and aspect features on the verb (2002:197). This is seen in a case alternation in Icelandic, which he claims is based on an event structure alternation. When two subevents of a predicate temporally overlap, accusative case is licensed. When two subevents do not temporally overlap, dative case is licensed.

This alternation can be seen in Icelandic verbs of motion: either dative or accusative case is licensed, depending on whether the subevents CAUSE and GO are temporally identified. If the Causer is involved throughout motion, the subevents overlap. If the Causer is only involved in causing the motion, the subevents do not overlap. Thus, verbs of ballistic motion, like *kasta* 'throw, fling, hurl', *henda* 'throw away', have dative case on the internal argument, because the two subevents are not temporally identified. Other verbs with movement of an object independent from the actions of agent/causer also take dative: *dreypta* 'drip', *fleyta* 'float', *sleppa* 'release'. Verbs of caused or directed motion, like *draga* 'pull, drag', *flytja* 'move, carry', have accusative case on the internal argument, as the two subevents are temporally identified.

Some verbs can occur with either accusative or dative, depending on whether they are interpreted as affected-object or ballistic motion verbs, as shown in (17):

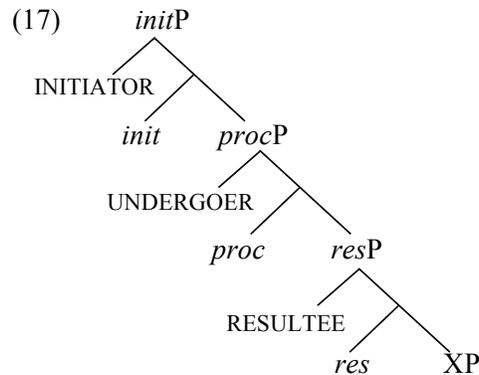
- (16) Motion alternations: accompanied/directed motion: ACC, ballistic motion: DAT
- a. *skjóta fuglinn* 'shoot the bird' (ACC)
  - b. [<sub>VP</sub> Agent CAUSE [<sub>VP</sub> Theme GO ]]  
           \\_\_\_ [ACC] \_\_\_/
  - c. *skjóta kúlunni* 'shoot the bullet' (DAT)
  - d. [<sub>VP</sub> Agent CAUSE [<sub>VP</sub> Projectile GO ]]  
           \\_\_\_ [DAT] \_\_\_/

Extending this analysis to the case alternations under investigation, the presence of a highly affected object can change the aspectual signature of V in Russian and Lithuanian, allowing for the temporal overlap in the subevents, and licensing accusative case.

This analysis of case alternations makes a connection between case licensing and event structure, as the verb phrase is deconstructed into multiple subevents. This follows from Ramchand’s “first phase syntax,” which I will outline in the next section. I will employ her structural representation of the subevents to account for the case alternations in Lithuanian and Russian.

### 3.3 Decompositional event structure (Ramchand 2008)

Ramchand (2008) proposes that the event structure of the *vP* can be represented structurally by decomposing it into three primitive subevents: causation (initiation), process, result. Argument structure alternations fall out from the relationships between the arguments and the subevents. Each subevent is the head of a phrase, and is associated with a “subject” in the specifier: INITIATOR, UNDERGOER, RESULTEE, respectively. Additionally there can be a PATH or a RHEME, which gives additional information or description of the event. The rHEME complement of *proc* is a PATH (trajectory traversed by UNDERGOER); the rHEME complement of *res* is a location.



The structure in (18) replaces the *vP* (and *VP*). Lexical items with *res*, *proc* and/or *init* features can (re)merge into those positions, as necessary. Likewise, a single argument can be the subject of multiple subevents. The result is composite roles, when the same argument is the holder of multiple states, such as INITIATOR-UNDERGOERS, RESULTEE-UNDERGOERS. Some examples, from Ramchand, are shown in (18):

- (18) a. Pure INITIATOR: *The key* opened the lock  
 b. Pure UNDERGOER: Karena drove *the car*  
 c. PATH: Ariel ate *the apple*; Kayleigh drew *a circle*  
 d. Pure RESULTEE: Katherine ran *her shoes* ragged  
 e. INITIATOR-UNDERGOER: *Karena* ran to the tree; *The diamond* sparkled  
 f. RESULTEE-UNDERGOER: Michael pushed *the cart* to the store

Based on the analysis of the data in section 2, the role of undergoer is consistently marked with accusative<sup>5</sup> case in Russian and Lithuanian. The instrumental case-marked arguments are in a different structural position, the rheme of *proc*, or PATH. As shown in (18c), paths are not necessarily literal paths of motion. The instrumental NPs in these alternations are means for performing the event, and describe how the undergoer moves (in the case of verbs of moving body parts) or how a sound is produced (in the case of verbs of making sound). In the next section, I will show how the structure in (17) can be used to account for the case alternations.

#### 4. Event structural analysis

Following Pylkkänen 2008, Lavine 2010, I will split *v* into two heads: *v*-VOICE projects the external argument and *v*-CAUSE assigns accusative. Additionally, I will use the label V in lieu of *proc*. The head *res* is used with change-of-state predicates. Accusative case undergoers appear in the specifier of VP, and instrumental arguments are complements of V. I assume the case is licensed by virtue of the thematic role of Instrument that these arguments hold.

##### 4.1 Verbs of moving a body part

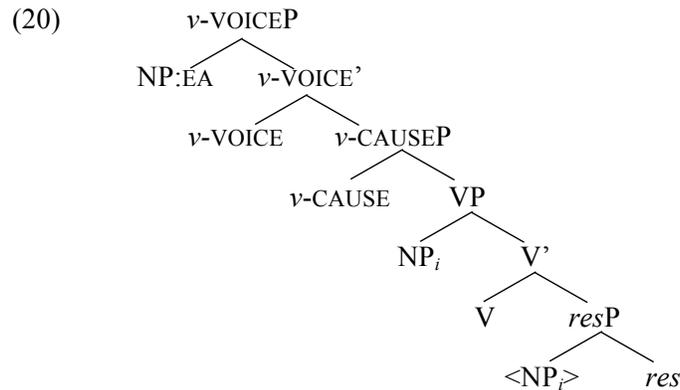
Following Letuchiy 2007, accusative occurs with verbs of result, and instrumental occurs with verbs of means. Thus, we should expect a *resP* only for accusative. Furthermore, the body part undergoes the movement, but also the holder of the result. Thus, the NP representing the body part occupies both the specifier of *res* and the specifier of V, indicated via coindexation. The structure of a sentence like (1b),

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<sup>5</sup> Other roles may be marked accusative as well, such as Path.

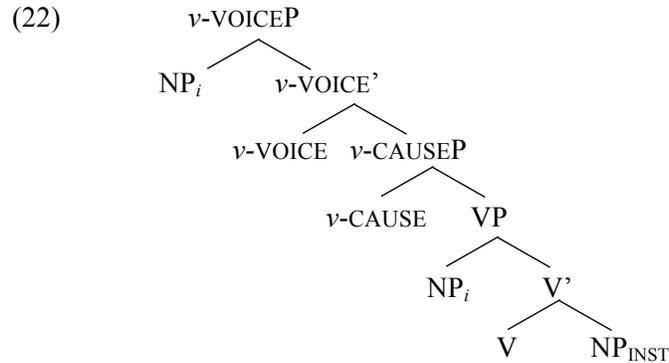
repeated here as (19), is shown in (20), with the external argument represented as EA.

- (19) Anna skreščivala nogi/\*nogami  
 Anna crossed legs<sub>ACC/\*INST</sub>  
 ‘Anna crossed her legs’



The instrumental is licensed with verbs of means, which do not necessarily have a *resP* because there is no inherent change of state or position. The body part is perceived to be an extension of the agent, as it is inalienably possessed, therefore I conclude that the external argument is an initiator-undergoer, and occupies both the specifier of V and the specifier of *v*-Voice. The instrumental NP is a rheme complement of V, describing the movement of the external argument/undergoer. I assume that the morphological case is licensed by virtue of the theta role Instrument. The structure of a sentence like (1a), repeated here as (21), is shown in (22).

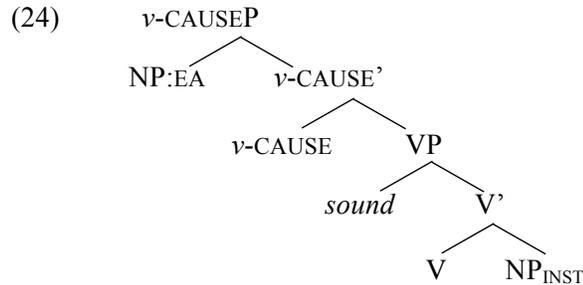
- (21) Anna požala \*pleči/✓plečami  
 Anna shrugged shoulders\*<sub>ACC/✓INST</sub>  
 ‘Anna shrugged her shoulders’



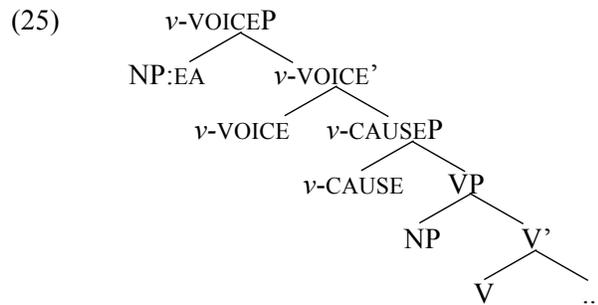
#### 4.2 Verbs of sound

Russian and Lithuanian both have a verb of making sound that does not have a case alternation (although there is an argument structure alternation), as shown in (1c)/(23a). The source of sound is always marked with instrumental case. Following Paducheva 1998, there is a cognate object meaning “sound” occupying the undergoer position. The instrumental rheme describes how the sound is made. There is no *v*-Cause head, as accusative is not licensed. If there is no external argument introduced by *v*-Voice, the lower NP can raise and become the grammatical subject, as in (1d)/(23b). The proposed structure of (23) is given in (24).

- (23) a. Okhrannik brenčal \*ključi/✓ključami  
 guard jingled keys\*<sub>ACC/✓INST</sub>  
 ‘The guard jingled the keys’  
 b. Ključi/\*ključami brenčali v karmane  
 keys<sub>NOM/\*INST</sub> jingled in pocket  
 ‘The keys jingled in the pocket’



Lithuanian causative forms of verbs of making sound allow either accusative or instrumental to appear on the internal argument, which represents the source of the sound. If it is accusative, the source of sound is the undergoer, and is in the specifier of V. There is no inherent change of state or position with these verbs, so the *resP* is not required. The structure is shown in (25).



If the argument is not a Proto-Patient (not affected by the agent, in this case), then it is a rheme complement of V, as with the verbs of moving a body part, in (20) above.

## 5. Conclusions

I have shown that a difference in morphological case can reflect a difference in event structure, which can be related to a difference in structural position. For the verb classes under investigation, accusative case is used to indicate the internal argument is a Prototypical Patient, in the sense of Dowty 1991: it is more affected, or undergoes a change of

state or position. Thus, accusative is not a pure structural case, but associated with a particular event structure for these verbs.

However, this seems to be limited to a few semantic classes of verbs, and does not work with verbs that license an idiosyncratic lexical case on the internal argument. It may only be possible because the instrumental case is related to the theta role, or it may be a fact about the event structure of these particular verbs that allow for this flexibility in structure, and by extension, case marking.

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**Futures in Polish and Slovenian:  
*A hole in a sock Theory*\***

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**1 The issue**

Polish has two future forms: (i) a simple future (= SF) form, which is a perfective form of a present tense verb (1a), and (ii) a periphrastic future (= PF) form, which consists of a BE-auxiliary, traditionally called “a future auxiliary,” and an imperfective lexical verb, in form of an *l*-participle or infinitive (1b,c). The PF in Polish in (1b) seems to be a direct counterpart of the Slovenian PF form in (2a). However, unlike in Polish, in Slovenian the *l*-participle in PF can be both [+impf] (2a) and [+perf] (2b).

- (1) a. napisze (Polish)  
write<sub>PRS.PERF.3SG</sub>  
‘He/she will write / will have written.’
- b. będzie      pisał      c. będzie      pisać  
be<sub>AUX.3SG</sub>      write<sub>PRT.IMPF.SG.M</sub>      be<sub>AUX.3SG</sub>      write<sub>INF.IMPF</sub>  
‘He/she will eat / will be writing.’
- (2) a. bo      pisał (Slovenian)  
be<sub>AUX.3SG</sub>      write<sub>PRT.IMPF.SG.M</sub>  
‘He/she will eat / will be writing.’
- b. bo      napisal  
be<sub>AUX.3SG</sub>      write<sub>PRT.PERF.SG.M</sub>  
‘He/she will write / will have written.’

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The claim we want to put forward in this paper is as follows: despite their similar morphological make-up, the PF forms in (1b) and (2a,b) are different both diachronically and syntactically. Nevertheless, the semantic contrasts between BE-aux+*l*-participle<sub>IMPF</sub> and BE-aux+*l*-participle<sub>PERF</sub> in Slovenian have their mirror image in the opposition between the PF and the SF in Polish. The goal of the paper is firstly, to explain the diachronic and syntactic differences between the Slovenian PF and the Polish PF, and secondly, to show on the basis of the new evidence from an online scenario-based questionnaire that despite these syntactic differences between Slovenian and Polish, the ingredients of the different future forms in these languages interact compositionally to give the same or similar interpretations. The proposed analysis will be based on Borik's (2002) semantics of tense and aspect and the pragmatic mechanism of blocking.

## 2 More about futures in Polish and Slovenian

### 2.1 Diachronic and syntactic differences

We follow Whaley (2000) in the assumption that the Slovenian *bo+/-* participle<sub>IMPF/PERF</sub> stems from the Old Slavic Future Perfect. In contrast, the participial future in Polish is an innovative construction (it was rarely attested in the earliest Polish texts). The original future form in Polish was the infinitival BE-future (1c). Even though at first glance it might seem that there is no difference between the Polish PF and the Slovenian PF as negation precedes both *bo* and *będzie* (cf. (3)), we argue that there is an important syntactic difference between them. First, it is a standard assumption in Slavic linguistics (Borsley and Rivero 1994) that there is a difference in the position of negation between Polish and Slovenian (cf. (4)). Second, *bo* in Slovenian (but not the Polish *będzie*) is a second position clitic (Franks and Holloway King 2000).

- (3) a. Janez **ne** *bo* pisał. (Slovenian)  
 Janez NEG BE<sub>AUX</sub> write<sub>PRT.IMPF.SG.M</sub>  
 'Janez will not write.' ('Janez will not be writing.')
- b. Jan **nie** *będzie* pisał. (Polish)  
 Jan NEG BE<sub>AUX</sub> write<sub>PRT.IMPF.3SG.M</sub>  
 'Jan will not write.' ('Jan will not be writing.')

- (4) a. **NegP** > TP > VP (Slovenian)  
 b. TP > **NegP** > VP (Polish)

### 2.2 Our assumptions

The BE-aux in Slovenian is a TP-related functional element (“higher auxiliary”). Given its high position it does not have any influence on the selection of the aspectual form of the *l*-participle; it can take both [+impf] and [+perf] verbal complements. In contrast, *będzie* in Polish is a VP-related element (“lower auxiliary”). Given its low position, it can directly select its verbal complement: it is compatible only with [+impf] complements. In this respect *będzie* shows a similar behavior to phase verbs like ‘begin’, which also only select [+impf] VP-complements.

The question is why *będzie* is compatible only with [+impf] verbal complements. This is so because the Polish *będzie*, unlike the Slovenian *bo*, is not completely devoid of the lexical content: it denotes a state BE. Denoting a state, *będzie* is compatible only with [+durative] eventualities, hence only [+impf] VP-complements are possible. Our prediction is that only in Slovenian it should be possible to use a second BE, spelling out the lower VP-part of the tree since the high BE-aux in T<sup>0</sup> in this language is completely devoid of the lexical content. This prediction is corroborated, as shown in (5).<sup>1</sup>

- (5) a. *bom*                    *bil*                    b. \**będe*                    *był*                    /*być*  
          be<sub>AUX.1.SG</sub>                be<sub>PRT.SG.M</sub>                be<sub>AUX.1.SG</sub>                be<sub>PRT.SG.M</sub>/be<sub>INF</sub>  
          ‘I will be’

Despite the above-mentioned differences, the semantic contrasts between BE-aux and *l*-participle<sub>IMPF</sub> and BE-aux and *l*-participle<sub>PERF</sub> in Slovenian have their mirror image in the opposition between the PF and the SF in Polish. In other words, the hypothesis to be tested in the remainder of the paper is the following:

<sup>1</sup> We would like to thank Frank Marusić for pointing this data to us. According to him (p.c.), there might be some dialectal variation. In his dialect, or at least for him, (5a) is the preferred way of saying this. In standard literary Slovenian only *bom* is allowed (*bom bil* is considered substandard and most likely even forbidden). Additionally to the western dialects (Lanko’s included), *bom bil* is supposedly popular also among the kids.

- (6) a. Slov. BE + [impf] and Pol. PF are syntactically different but semantically equivalent.  
 b. Slov. BE + [perf] and Pol. SF are syntactically different but semantically equivalent.

### 2.3 New observations

It is a well-known fact that there are aspectual differences between BE+[perf]/SF and BE+[impf]/PF: while the latter are compatible with durative adverbials ('for an hour'), the former are compatible with completive adverbials ('in an hour'). However, what is less known is the fact that semantically, the difference between these forms is more than just aspectual. Even if there are contexts (e.g., intention or prediction; cf. (7)-(8)) in which both SF/BE+[perf] and PF/BE+[impf] are equally good, there are other contexts in which only one future form, either SF/BE+[perf] or PF/BE+[impf], is acceptable or at least strongly preferred (9)-(12).<sup>2, 3</sup>

#### 2.3.1 SF/BE+[perf] and PF/BE+[impf] equally good

- (7) a. Obiecuje,           ze       ci       jutro           pomogę.  
           promise<sub>PRS.1SG</sub> that   you<sub>DAT</sub> tomorrow   help<sub>PRS.PERF.1SG</sub>  
           'I promise that I will help you tomorrow.'  
 b. Obiecuje,           ze       ci       jutro  
           promise<sub>PRS.1SG</sub> that   you<sub>DAT</sub> tomorrow  
           będe   pomagał           przez cały dzień w sprzątaniu.  
           be<sub>AUX.1.SG</sub> help<sub>PRT.IMP.F.SG.M</sub> for whole day in cleaning  
           'I promise that I will help you the whole day tomorrow with  
           cleaning.'  
 (8) Patrz               na       jej       twarz.  
       look<sub>IMP.2SG</sub>   at       her       face  
       'Look at her face.'

<sup>2</sup> To test this, we used a scenario-based online questionnaire (a Polish version [www.ifa.uni.wroc.pl/questionnairePL](http://www.ifa.uni.wroc.pl/questionnairePL) and a Slovenian version [www.ifa.uni.wroc.pl/questionnaireSL](http://www.ifa.uni.wroc.pl/questionnaireSL)).

<sup>3</sup> Due to space constraints, the discussion of the relevant contexts is kept at the necessary minimum. Also for reasons of space we will only present the relevant Polish examples.

- a. Basia zaraz się rozplacze.  
 Basia immediately refl burst-into-tears<sub>PRS.PERF.3SG</sub>  
 ‘Basia is going to/will burst into tears right now.’
- b. Basia zaraz będzie płakała.  
 Basia immediately be<sub>AUX.3.SG</sub> cry<sub>PRT.IMPF.SG.F</sub>  
 ‘Basia is going to/will cry right now.’

### 2.3.2 SF/BE+[perf] and PF/BE+[impf] not equally good

The first difference in meaning between SF/BE+[perf] and PF/BE+[impf] can be observed in ‘warning contexts’ presented in (9). SF/BE+[perf] expresses a strong warning and it implies that the hearer can still do something to prevent the action of falling. In other words, the action of falling in (9a) is not prearranged at the moment of speaking. By contrast, PF/BE+[impf] used in a warning context in (9b) announces an action which is already settled at the moment of speaking.

- (9) a. Uwaga, spadniesz!  
 caution fall-down<sub>PRS.PERF.2SG</sub>  
 ‘Be careful/Watch out: You are going to fall down (otherwise)!’
- b. Uwaga, będziesz spadał!  
 caution be<sub>AUX.2SG</sub> fall-down<sub>PRT.IMPF.SG.M</sub>  
 ‘Caution: you will be falling down (now).’ (‘Caution: you are now beginning to fall down.’)

The second difference in meaning between SF/BE+[perf] and PF/BE+[impf] can be observed ‘question contexts’ presented in (10). When SF/BE+[perf] is used, we actually ask two questions: *who will perform a future action* and *whether the future action will take place at all*. It is not certain at the moment of asking whether the action of repairing a car will take place in the future or not. (10a) does not presuppose the existence of a plan of a future action. On the other hand, the question with the PF/BE+[impf] contains one question: *who will perform a future action*. In (10b) it is certain that someone will be repairing my car but it is still unknown who it will be.

- (10) a. Kto naprawi mi samochód?  
 who repair<sub>PRS.PERF.3SG</sub>me<sub>DAT</sub> car<sub>ACC</sub>  
 ‘Who will repair my car?’

- b. Kto będzie mi naprawiał samochód?  
 who be<sub>AUX.3SG</sub> me<sub>DAT</sub> repair<sub>PRT.IMPF.SG.M</sub> car<sub>ACC</sub>  
 ‘Who will be repairing my car?’

The third difference in meaning between SF/BE+[perf] and PF/BE+[impf] can be observed in ‘offering contexts’ (see Copley 2002) presented in (11). Only SF/BE+[perf] forms are suitable in such contexts (cf. (11a)) since offering entails that the decision as to a future action has not been made yet and the hearer can still decide whether he or she wants the offer to be realized in the future. By contrast, PF/BE+[impf] (11b) is not suitable in offering contexts under an episodic interpretation since it presupposes that the future action is prearranged at the moment of speaking and the hearer has no say on the offered issue.

- (11) a. Jeśli chcesz, nasza firma naprawi ci auto.  
 if want<sub>PRS.2SG</sub> our company repair<sub>PRS.PERF.3SG</sub> you car  
 ‘If you want, our company will repair your car.’  
 b. #Jeśli chcesz, nasza firma będzie ci naprawiać auto.  
 if want<sub>PRS.2SG</sub> our company be<sub>AUX.3SG</sub> you repair<sub>MPF</sub> car  
 ‘#If you want, our company will repair your car.’

The fourth difference in meaning between SF/BE+[perf] and PF/BE+[impf] arises in idiomatic ‘I cannot believe that’ (= ‘I am amazed that’) contexts (see Copley 2002) presented in (12). Only PF/BE+[impf] (12b) is compatible with an idiomatic use of this phrase.

- (12) a. Nie chce mi się wierzyć,  
 not wants me<sub>DAT</sub> refl believe<sub>INF</sub>  
 że Jan wykona tak odpowiedzialne zadanie.  
 that Jan fulfil<sub>PRS.PERF.3SG</sub> such responsible task  
 ‘I can’t believe that Jan will fulfil such a responsible task.’  
 (only literal meaning, no idiomatic meaning)  
 b. Nie chce mi się wierzyć,  
 not wants me<sub>DAT</sub> refl believe<sub>INF</sub>  
 że Jan będzie wykonywał tak odpowiedzialne zadanie.  
 that Jan be<sub>AUX.3SG</sub> fulfil<sub>PRT.IMPF</sub> such responsible task  
 ‘I can’t believe that Jan will be fulfilling such a responsible task.’  
 (literal meaning + idiomatic meaning)

#### 2.4 Taking stock so far

In the previous section we saw that SF and BE+[perf] are strongly preferred in the following contexts: (i) warning as caution, (ii) offering, (iii) question: ‘whether’ = undetermined, ‘who’ = undetermined. In contrast, PF and BE+[impf] are strongly preferred in the following contexts: (iv) warning as announcement, (v) ‘I can’t believe’ (= ‘I am amazed’), (vi) question: ‘whether’ = determined, ‘who’ = undetermined.

The conclusion we can draw is that PF/BE+[impf] but not SF/BE+[perf] is compatible with contexts in which the future action is settled at the moment of speaking. Two questions arise at this point.

First, why are some contexts (recall: (i)-(iii)) compatible with SF (Pol.) / BE+[perf] (Slov.)? And why are some other contexts (recall: (iv)-(vi)) compatible with PF (Pol.) / BE+[impf] (Slov.)?

Second, why do we have the semantic correspondence between the Polish and Slovenian future forms despite their different composition? That is, why SF (Pol.) does correspond to BE+[perf] (Slov.) and why PF (Pol.) does correspond to BE+[impf] (Slov.)?

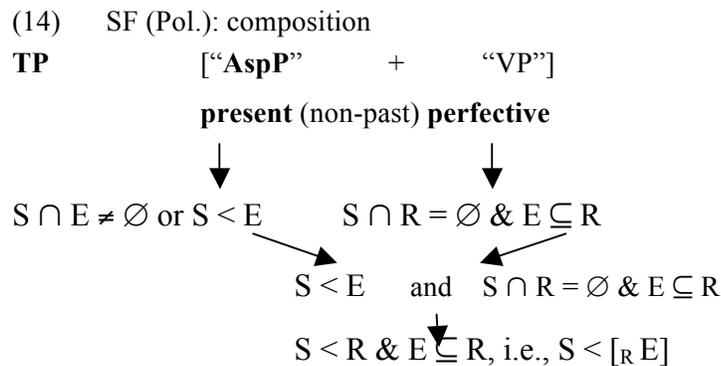
### 3 Our proposal

Let us start with the following observation. Offering and warning presuppose that it should be possible to change or to prevent a future eventuality, hence such events cannot be settled or prearranged at the moment of speaking. In contrast, one can only be amazed by something which is already settled (prearranged) at the moment of speaking.

Having said this, we can now formulate the following hypothesis: in order to be able to change or to prevent a future eventuality, there must be time between the moment of speaking and the beginning of an event. This is our “hole in a sock” theory. Since only the SF in Polish and BE+[perf] in Slovenian are good in ‘warning’ and ‘offering’ contexts, we expect to find a “hole” in these future forms. The question is how this hole is obtained compositionally in these two future constructions, especially since the SF in Polish is syntactically different from BE+[perf] in Slovenian. To account for this, we would like to propose the following analysis.



form is a combination of present tense and perfective aspect. What is the role of these components? First of all, it should be clarified that present tense in Polish (or Russian) should rather be treated as non-past because depending on its combination with perfective or imperfective aspect it has a future or present interpretation, respectively. In Borik’s account, there are two possible configurations for non-past: (i)  $S \cap E \neq \emptyset$  or (ii)  $S < E$ . But remember that SF in Polish is not just present tense (non-past) morphology but also perfective aspect. The first non-past configuration,  $S \cap E \neq \emptyset$ , is overwritten by the semantics of perfective aspect,  $S \cap R = \emptyset \ \& \ E \subseteq R$ . This is so because this non-past configuration requires the E and S intervals to overlap, while the perfective configuration requires that the intersection of S and R, which in turns contains E, should be empty. Due to this contradiction, we are left with the second non-past configuration,  $S < E$ . Schematically, the composition of the Polish SF can be envisaged as in (14).



Notice that even though there is no temporal future auxiliary in the case of the Polish SF, the combination of the non-past (present tense) and perfective aspect yields the same meaning as the BE+[perf] future in Slovenian. More importantly, this means that also in the case of the Polish SF there is a necessary gap between the speech time and the time of a future eventuality. The prediction is that this form will be incompatible with a context in which the future eventuality should be understood as a natural (“seemingly temporally uninterrupted”) continuation of something which holds true at the moment of speaking.

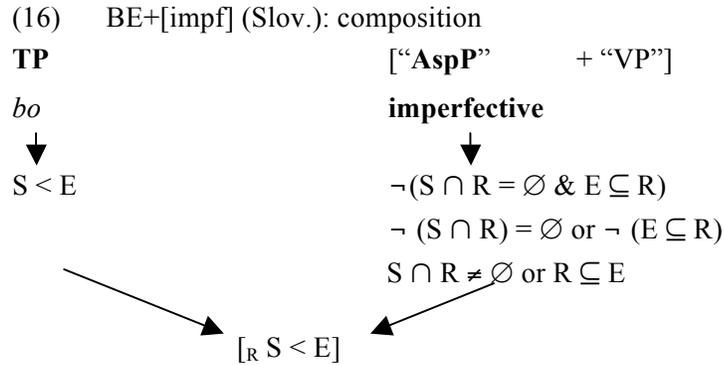
This prediction is borne out since SF is incompatible with ‘still’ contexts, as illustrated in (15).

- (15) \*Jan czyta gazetę i nadal ją przeczyta.  
 Jan read<sub>PRS.IMPF.3SG</sub> newspaper and still it read<sub>PRS.PERF.3SG</sub>  
 ‘\*Jan is reading a newspaper and he will still have read it.’

With this in mind, we can turn now to the semantics of BE+[impf] in Slovenian and the PF in Polish and ask what makes these forms suitable in contexts expressing prearranged/preplanned future eventualities. Let us start with the Slovenian BE+[impf] future form.

### 3.3 BE+[impf] (Slov.)

As in the case of BE+[perf] future (recall section 3.1), the temporal auxiliary *bo* in Slovenian has a purely temporal function, namely that of locating the event time after the speech time:  $S < E$ . What we need to clarify is the semantic contribution of the imperfective aspect marked on the *l*-participle. Borik (2002) defines imperfective aspect as non-perfective, which means that the semantics of imperfective aspect can be envisaged as an external negation of the perfectivity condition, which shifts the conjunction  $\neg(S \cap R = \emptyset \ \& \ E \subseteq R)$  into a disjunction, yielding  $\neg(S \cap R) = \emptyset$  or  $\neg(E \subseteq R)$ . In other words, in order to be interpreted as imperfective at least one of the two conditions must be satisfied: either  $S$  and  $R$  overlap or it is not the case that  $E$  is included in  $R$ . Now let us see what we obtain if we combine imperfective aspect with the temporal future auxiliary. A combination of the first condition, i.e., the reference time overlaps with the speech time,  $S \cap R \neq \emptyset$ , with the semantics of *bo* in Slovenian,  $S < E$ , gives us the following:  $R \cap S \neq \emptyset \ \& \ S < E$ . This formula says that the reference time overlaps with the speech time while the event time follows the speech time, i.e.,  $[_R S < E]$ . Schematically, the composition of the Slovenian BE+[impf] can be envisaged as in (16).



If we assume Copley’s (2002) definition of a plan according to which a plan is a set of propositions which are true before or at the moment of speaking, it becomes clear why it is the BE+[impf] future in Slovenian which is more suitable for the expression of preplanned eventualities or eventualities that are presupposed to be true at the moment of speaking. This is so because the semantics of this form guarantees that there will be an overlap between the speech time and the reference time. It seems that it is the lack of this particular gap which can be taken to be responsible for the new data that we discuss in this paper. This observation in fact makes the Slovenian BE+[impf] future a mirror image of the English present perfect [<sub>R</sub> E < S] in which we interpret the past event as being relevant to the present thanks to the overlap between the speech time and the reference time. Let us turn now to the Polish PF and ask what makes this form more suitable for the expression of preplanned eventualities.

### 3.4 PF (Pol.)

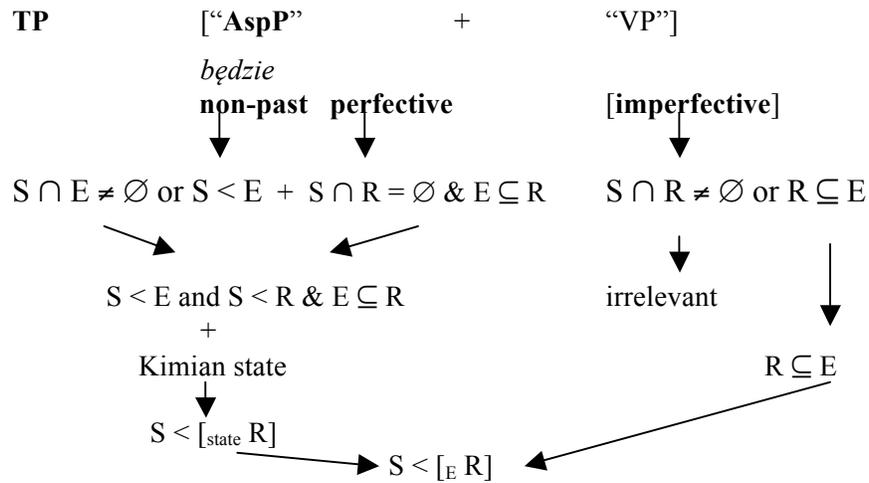
Recall from section 1 that the periphrastic future form in Polish is a combination of a BE-auxiliary and an imperfective lexical verb, in form of an *l*-participle or infinitive. The first issue that needs to be clarified is the status of *będzie*. Unlike the Slovenian *bo*, the Polish *będzie* is a kind of a semi-lexical element which means that even though it has a specific grammatical function, it is not completely devoid of the semantic content as it introduces a state BE (see also section 2.2). Morphologically and diachronically, *będzie* is a perfective present tense (non-past) form of

BE.<sup>4</sup> The next question is how *będzie* (be<sub>PRS,PERF</sub>) interacts compositionally with the *l*-participle/infinitive in the complement of the PF in Polish. The function of *będzie* is to guarantee a future interpretation. How exactly? *Będzie* being perfective imposes the following condition:  $S \cap R = \emptyset \ \& \ E \subseteq R$ . This in a combination with its non-past component,  $S \cap E \neq \emptyset$  or  $S < E$ , results in the following semantics:  $S < E$  and  $S < R \ \& \ E \subseteq R$ . However, there is one important restriction, namely: *będzie* is a Kimian state (see Maienborn 2001 for discussion), i.e., it does not introduce a typical eventuality argument but rather it introduces a referential argument for a temporally bound property exemplification. Since perfective aspect on *będzie* does not have any lexical access to an eventuality argument, it cannot operate on it and this makes the relation between the event time and the reference time undetermined. Since the relation is grammatically not specified, we have to accept by default that the reference time is included in the state introduced by *będzie*. In other words, we have the following situation:  $S < [_{\text{state}} R]$ . Its relevance will become clear in a moment but first let us concentrate on the contribution of the imperfective complement of *będzie*. Imperfectivity requires that one of the following two conditions is satisfied:  $S \cap R \neq \emptyset$  or  $R \subseteq E$ . The first condition,  $S \cap R \neq \emptyset$ , is irrelevant in the case of the lexical imperfective complement of *będzie* since this relation is already established by the perfective *będzie* in such a way that  $S \cap R = \emptyset$ . So what we are left with is only the second relation, namely:  $R \subseteq E$ . As such it perfectly matches the semantics of *będzie* which also requires that the reference time is included in the stative eventuality. This results in the interpretation in which the reference time is located after the speech time but it is included both in the stative eventuality provided by *będzie* and by the eventuality provided by its imperfective complement. This combination of *będzie* and its imperfective complement leads to the following semantics of PF:  $S < [_{E} R]$  where E stands for the combination of the state BE and the event denoted by the imperfective complement of *będzie*. Schematically, the composition of the Polish PF can be envisaged as in (17).

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<sup>4</sup> As far as diachrony is concerned, there is evidence that *będzie* originates from the perfective present tense paradigm of the Old Church Slavonic verb *byti* ‘to be’ (van Schooneveld 1951).

(17) PF (Pol.): composition



But how to account for the fact that it is the PF which is preferably used for the expression of preplanned/prearranged future eventualities? We will come back to this question in the next section. What is crucial at this point of argumentation is that firstly, the plan is not part of the semantics of the Polish PF form, and secondly, the event time follows the speech time and it contains the reference time but the boundaries of an event are open and hence a future event can be understood as immediately following the speech time. Additional support for this assumption comes from the observation that the PF form in Polish, in contrast to the SF form (recall ex. (15)) can be used in a ‘still’ context, as shown in (18).

(18) Jan        czyta                gazetę  
 Jan        read<sub>PRS.IMPF.3SG</sub> newspaper  
 i        nadal        będzie                ją        czytał.  
 and       still       be<sub>PRS.PERF.3SG</sub> it       read<sub>PRT.IMPF.SG.M</sub>  
 ‘Jan is reading a newspaper and he will still be reading it.’

The situation denoted by PF in (18) can serve as a natural continuation of a situation which is going on at the point of utterance.

#### 4 Discussion and conclusions

One conclusion from the argumentation in sections 3.1-3.4 is that while the semantics of SF (Pol.) and BE+[perf] (Slov.) is identical, the semantics of PF (Pol.) and BE+[impf] (Slov.) is similar but not entirely equivalent. This in fact weakens our initial hypothesis put forward in (6), where we expected a complete equivalence between SF (Pol.) and BE+[perf] (Slov.), on the one hand, and PF (Pol.) and BE+[impf] (Slov.), on the other hand. This does not have to be a problem as long as our analysis is able to explain the perfect equivalence in the distribution of the respective forms. As will be shown below, our analysis – once enriched by a blocking mechanism – is able to provide a plausible account of the distributional equivalence between the discussed future forms in Polish and Slovenian.

Let us start by recalling that SF (Pol.) and BE+[perf] (Slov.) are syntactically different but semantically equivalent and they both are excluded from preplanned/prearranged future contexts. As far as PF (Pol.) and BE+[impf] (Slov.) are concerned, these forms are syntactically different. However, also in terms of semantics they do not match perfectly. There is one thing these forms have in common though, namely, their preferable usage in contexts in which a future eventuality is preplanned/prearranged. Can this preference be attributed to some special property of these forms? Not completely because in neither of these forms the plan is part of their semantics. How can this preference be then explained? We would like to suggest that what seems to be going on is a kind of blocking which can be captured by resorting to *Maximize Assertion* (Use the most informative assertion that is true!) and *Maximize Presupposition* (Use the most informative presupposition that is satisfied!) principles, which have been claimed to determine the choice between competing grammatical forms in different languages (see, e.g., Heim 1991 and Sauerland 2003).

If in a language there are two different forms that express similar meanings, the competition between them is resolved in such a way that whenever the form which is more specific (i.e., it has a more restricted meaning by contributing stronger entailments or presuppositions) cannot be used in a given context because some of its entailments or presuppositions would not be satisfied, the less specific (less restricted or a weaker) form has to be used instead. Let us now apply this blocking

mechanism to the usage of the Polish and Slovenian future forms discussed in this paper. As already pointed out at the beginning of this section, both Polish and Slovenian have two future forms out of which SF (Pol.) and BE+[perf] (Slov.) are excluded from contexts in which a future event is presupposed to be true at the moment of speaking or is a natural continuation of a plan (or some other event) holding at the moment of speaking. Interestingly, it turned out that the semantics of SF (Pol.) and BE+[perf] (Slov.) is identical, namely:  $S < [{}_R E]$ . The event is encapsulated within the reference time and as such it constitutes an atom with a clear boundary which in turn makes it clearly separate from anything going on at the moment of speaking. Given this, in a context in which we want to express the meaning that the future eventuality is a continuation of some plan or some other event holding at the moment of speaking, SF (Pol.) and BE+[perf] (Slov.) cannot be used because precisely this presupposition would not be satisfied. Hence a less restricted form has to be used instead. In our case this would be either PF (Pol.) or BE+[impf] (Slov.). In what sense are PF (Pol.) or BE+[impf] (Slov.) less restricted than SF (Pol.) and BE+[perf] (Slov.)? Recall that the semantics of BE+[impf] (Slov.) is formulated as  $[{}_R S < E]$ , which means that even if the event is temporally distant, it is related to the moment of speaking through the fact that the intersection between the speech time and the reference time is not empty. It seems that the lack of a clear boundary between the reference time and the speech time (in comparison with the BE+[perf] form) makes it less restricted in use. What about the Polish PF form? In the case of PF (Pol.) we obtained compositionally the following meaning:  $S < R \subseteq E$ , where the event time follows the speech time but it is not encapsulated within the reference time and hence it has open boundaries. As such it can (but does not have to) be used in a scenario in which a future eventuality is a smooth (uninterrupted) continuation of a plan or any event holding true at the moment of speaking.

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## On Syntax of Verbal *-m-* Adjectives and Passive Present Participles in Russian

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Let's consider verbal *-m-* adjectives and passive present participles in Russian like in examples below.

Passive present participles:

- (1) a. *čitaemyj*  
'being read'
- b. *upravljaemyj*  
'being controlled'
- c. *upominaemyj*  
'being mentioned'

Verbal *-m-* adjectives:

- (2) a. *vypolnimyj*  
'executable'
- b. *primenimyj*  
'applicable'
- c. *dopustimyj*  
'acceptable'

They are morphologically homonymous and there is a lot of literature about their differences and properties. For example: [Petrova 2008].

In [Babby 1973: 353] it is said that “the transformational status of the 'present passive participle' in modern colloquial Russian, e.g.

*uznavaem* SF m.sg. 'recognizable', *čitaem* '(being) read', *obsuždaem* 'being discussed', is unclear to me, and requires further study. Although it can theoretically be formed from most imperfective verbs, in practice it is rarely used. It is probably most correct to consider the few examples commonly used in colloquial Russian as adjectives, not a product of the transformational component.”

The system of these derivatives in traditional Russian grammars is as follows:

Table 1 Traditional system of derivatives

	Episodic semantics	Modal semantics
<b>-m- derivatives from imperfective verbs</b>	I + (1)	II –
<b>-m- derivatives from perfective verbs</b>	III –	IV + (2)

Cells of the table are marked with numbers to refer to them. Pluses and minuses mean that these combinations are either possible or not possible. If possible the link to the example is given.

But in modern colloquial Russian one can find examples of both cells II and III of the Table 1:

- (3) a. *Horošaja belaja bumaga, legko čitaemyj šrift, udobnyj format.*  
[From RNC<sup>1</sup>]
- b. *čita-em-yj* *šrift*  
read.Impf-M-Sg.Masc.Nom font  
'the font that can be read'
- (4) a. *Esli tvoj muž čelovek upravljaemyj, to im vseгда budet vertet' kakaja-nibud' ženščina.*  
[From RNC]
- b. *upravlja-em-yj* *čelovek*  
control.Impf-M-Sg.Masc.Nom person  
'the person that can be controlled'

1 Russian National Corpus (<http://ruscorpora.ru>)

- (5) a. *Krome toho, mnohí často **vypolnime** podprogramy pereneseny v Lic.*  
[from the Internet]
- b. *často vypoln-im-ye podprogramy*  
often execute.Perf-M-Pl.Nom subprogrammes  
'the subprogrammes that are executed often'
- (6) a. *Eě prozračny, no horošo **oščutime** im ruki obvili ego šeju.*  
[from the Internet]
- b. *oščut-im-ye im ruki*  
feel.Perf-M-Pl.Nom by.him arms  
'the arms that he feels'

Table 2 Updated system of derivates

	<b>Episodic semantics</b>	<b>Modal semantics</b>
<b>-m- derivates from imperfective verbs</b>	I + (1)	II + (3), (4)
<b>-m- derivates from perfective verbs</b>	III + (5), (6)	IV + (2)

We consider both (traditional) verbal -m- adjectives and (traditional) -m- participles as a single set of derivates (M-derivates) and try to classify them on basis of their possible meaning and formal syntactic tests which leads us to their syntactic structure.

The properties being tested are as follows:

- (7) a. semantics: episodic / modal / property
- b. the possibility of combination with adverbial quantifiers like *často* 'often'
- c. the possibility of combination with gradual adverbs like *ves'ma* 'very'
- d. the possibility of combination with agentive by-phrases and agentive adjuncts like *special'no* 'on purpose'

On basis of these properties the tested set breaks up into three classes:



- (9) *často upravlja-em-yj* *apparat*  
 often control-M-Sg.Masc.Nom apparatus  
 a. ‘the apparatus that is controlled often’  
 b. \* ‘the apparatus that can be controlled often’
- (10) *ves'ma upravlja-em-yj* *apparat*  
 very control-M-Sg.Masc.Nom apparatus  
 a. \* ‘the apparatus that is being controlled in high degree’  
 b. ‘the apparatus that can be controlled with high degree of possibility’
- (11) *upravlja-em-yj* *čelovekom* *apparat*  
 control-M-Sg.Masc.Nom by.man apparatus  
 a. ‘the apparatus that is being controlled by man’  
 b. \* ‘the apparatus that can be controlled by man’
- (12) *legko ljub-im-yj* *papa*  
 easily love-M-Sg.Masc.Nom father  
 a. ‘the father that is loved easily’  
 b. \* ‘the father that can be loved easily’
- (13) \* *často ljub-im-yj* *papa*  
 often love-M-Sg.Masc.Nom father
- (14) *ves'ma ljub-im-yj* *papa*  
 very love-M-Sg.Masc.Nom father  
 ‘the father that is loved very much’
- (15) *isk-om-yj* *rezul'tat*  
 search-M-Sg.Masc.Nom result  
 a. ‘the result that is being searched’  
 b. \* ‘the result that can be searched’
- (16) *často isk-om-yj* *rezul'tat*  
 often search-M-Sg.Masc.Nom result  
 ‘the result that is searched often’
- (17) \* *ves'ma isk-om-yj* *rezul'tat*  
 very search-M-Sg.Masc.Nom result
- (18) *isk-om-yj* *nami* *rezul'tat*  
 search-M-Sg.Masc.Nom by.us result  
 ‘the result that is searched by us’

We claim that both types of semantics are possible for the majority of M-derivates (see similar conclusion in [Petrova 2008]). So most M-derivates (those of standard class) participate in two types of M-

derivation – the “high” one (which gives episodic semantics) and the “low” one (which gives modal semantics).

In case of “high” M-derivation the adjectival suffix dominates:

- AspP (all M-derivates with episodic semantics are imperfective (5), (19) [Alexiadou & Anagnostopoulou 2008],
- Asp<sub>freq</sub>P (and other “high” adverbial projections [Cinque 1999]),
- VoiceP (where, as we suppose, agent is generated),
- vP and VP.

- (19)a. *Kontekstnaja reklama - termin, často primenimyj dlja tekstovoj reklamy v vide ob"javlenij v poiskovyh sistemah.* [from the Internet]
- b. *termin často primen-im-yj*  
 term often use.Perf-M-Sg.Masc.Nom  
 ‘the term that is used often’

In case of “low” M-derivation the adjectival suffix dominates only vP (where “low” adverbials and adjuncts are generated – they are possible with modal semantics (20), (21)) and VP.

- (20)a. *Angličane očen' ljubjat glagol to muddle through, trudno perevodimyj na russkij jazyk.*  
 [from the Internet]
- b. *glagol perevod-im-yj na*  
*russkij jazyk*  
 verb translate-M-Sg.Masc.Nom Prep.  
 Russianlanguage  
 ‘the verb that can be translated to Russian’
- (21)a. *Èta model' obespečivaet komfort, legko sravnimyj s komfortom avtomobilja.*  
 [from the Internet]
- b. *komfort sravn-im-yj s*  
*komfortom avtomobilja*  
 comfortcompare-M-Sg.Masc.Nom Prep.  
 comfortof.car  
 ‘the comfort that can be compared to the comfort of a car’

So M-derivates of **standard class** may be derivated both with “high”

and with “low” M-derivation. M-derivates of **reduced class** are derived only with “low” M-derivation. And M-derivates of **-om- class** are derived only with “high” M-derivation.

Such analysis describes the behavior of M-derivates shown in Table 3 above and explains the differences between syntactic structure of three classes of derivates.

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## Case and Agreement Patterns in Northern Russian Participial Constructions in *-n-/-t-*\*

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Northern Russian dialects (henceforth NR) have developed a special kind of participial perfect as in (1), which is not found in Central and Southern dialects and in Contemporary Standard Russian (hereafter CSR).<sup>1</sup>

- (1)     *u lisicy*            *unese-n-o*            *kuročk-a*  
          at fox<sub>GEN</sub>        carried.away<sub>N.SG</sub>        chicken<sub>F.SG.NOM</sub>  
          ‘A fox has carried off a chicken.’ (Kuz’mina & Nemcenko 1971:27)

Starting from Timberlake (1976), NR participial constructions have drawn the researchers’ attention due to their uncommon features and their patterns of variation across the different dialects, some of them displaying agreement of the participle with the internal argument DP<sup>2</sup> or assigning accusative case to the latter, not to mention the different agreement configurations when an auxiliary intervenes.

In this paper I will claim that the cross-dialectal variation can be ascribed to specific properties of morphological elements, namely the par-

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<sup>1</sup> The NR participial perfect has been described by Obnorskij (1953) and Trubinskij (1984), among others, and especially by Kuz’mina & Nemčenko (1971, hereafter K&N), whose monograph exhaustively covers the cross-dialectal variation that these constructions exhibit, offering at the same time an impressive amount of data.

<sup>2</sup> From now on, I will refer to all nominals surfacing in argumental position as DPs, abstracting away from the question whether in Russian nouns without a determiner are NPs or DPs. For the purposes of the present discussion this question is in fact irrelevant.

ticiple inflectional head *-n-* and the agreement inflections *-a* and *-o*, arguing that the latter are able to satisfy the EPP requirement. Hence, recourse to the notion of “quirky” or “oblique” subject, which has been often deployed to account for NR constructions, is unnecessary.

The paper is organized as follows: in section 1 I present the data from the different dialects, section 2 is devoted to a brief survey of the previous proposals on the topic, in section 3 I present my proposal starting from the adopted framework (§ 3.1) and the analysis of the participle (§ 3.2.1); then I discuss the agreement patterns in § 3.2.2-3.2.5 and the accusative pattern in § 3.2.6 and draw some conclusions in section 4.

## 1 Perfect participial constructions in NR

### 1.1 Areal distribution

In East Slavic, perfect constructions with the Past Passive Participle (henceforth PPP) are widespread throughout Northern Russia, more or less in the regions north of a line extending from the 56<sup>th</sup> parallel in the Western Central dialects to the 60<sup>th</sup> parallel in the Northeastern dialects. While the participial perfect is uniformly attested in this area, different patterns expressing its variation are finely scattered throughout and can occur side by side in neighboring villages or even in the same dialect.

Although data in the main descriptive works mentioned above date back to dialectal surveys conducted in the first half of 20<sup>th</sup> century, the use of these forms seems to be well established also nowadays, as witnessed by the National Corpus of Russian Language ([www.ruscorpora.ru](http://www.ruscorpora.ru)) that includes data collected in the last two decades.

### 1.2 Data

PPPs in CSR have the following morpho-syntactic properties:

- a) They can be formed only from perfective transitive verbs, denoting, in general, a state resulting from a preceding action:
- (2) *Polja pokry-t-y/\*pokryva-n-y snegom*  
       fields<sub>N.PL.NOM</sub> covered<sub>PFV/IPVF.PL</sub> snow<sub>INS</sub>  
       ‘The fields are covered with snow.’ (CSR)
- b) The external argument (hereafter EA) of the verb can be expressed optionally by way of a DP in instrumental case (cf. *snegom* in (2)).
- c) In predicative contexts the PPP gives rise to a canonical passive, i.e. the promotion of the internal argument (hereafter IA) is achieved

through the assumption by the DP of all the properties usually associated with the subject of declarative active sentences, namely:

- i. nominative case (cf. *polja* in (2))
  - ii. agreement with the participle (here, in gender and number; cf. *pokrity* agreeing with *polja* for plural in (2))
  - iii. the ability to bind anaphors within the clause:
- (3) *Ja byla zanjata svoimi problemami*  
 I was<sub>F.SG</sub> held<sub>F.SG</sub> refl<sub>PL.INS</sub> problems<sub>INS</sub>  
 ‘I was busy with my own problems.’ (CSR)

The morpho-syntactic behavior of NR PPP, contrasting sharply with properties of CSR PPPs in a)-c), is illustrated in points d)-f), below:

- d) The NR PPPs do not display selectional restrictions with respect to aspect (i) and transitivity (ii, iii):

- i. Imperfective verbs can combine with *-n/-t-* to form a PPP:
- (4) *Koše-n-o l’ sen-a u tja?*  
 mowed<sub>IPFV-N.SG</sub> Comp hay<sub>GEN</sub> at you<sub>SG.GEN</sub>  
 ‘Did you mow some hay?’ (Obnorskij 1953 [=OB]:157)

- ii. The participial inflection *-n/-t-* can select intransitives:
- (5) *U menja uže vsta-t-o by-l-o*  
 at me<sub>GEN</sub> already got.up<sub>N.SG</sub> was<sub>N</sub>  
 ‘I had already got up.’ (K&N:99)

- iii. *-n/-t-* can show up also on inherently reflexive verbs and is compatible, however, with the reflexive *-sja/-s’*:
- (6) *Vsja oborva-n-a -s’ by-l-a*  
 all torn.up<sub>F.SG</sub> refl was<sub>F.SG</sub>  
 ‘It was all torn up.’ / ‘It had been all torn up.’ (K&N:26)

- e) The EA (or the IA of inaccusatives) can be optionally expressed, as in CSR, through a *by*-phrase. The latter, unlike CSR, is expressed by a locative PP with *u* ‘at’ followed by a noun in genitive<sup>3</sup>, and has the properties i-iv, qualifying it as a quasi-subject (Timberlake 1976)<sup>4</sup>.

<sup>3</sup> Some dialects use the preposition *ot* ‘from’ instead of *u* ‘at’, whereas few other dialects have a noun in instrumental case, like CSR. For the approach I will be pursuing here, it has no particular relevance whether the Agent is expressed through a locative-possessive PP, an ablative PP or a DP in instrumental case, nevertheless I will use only examples

- i. It can control PRO in infinitival clauses:
- (7) [*U nego*]<sub>j</sub> *by-l-o* *vzja-t-o -s'*<sub>j</sub> PRO<sub>j</sub> *skosi-t' gektar*  
 at him<sub>GEN</sub> was<sub>N.SG</sub> taken<sub>N.SG</sub> refl mow<sub>INF</sub> hectare  
 'He undertook to mow the hectare.' (K&N:99)
- ii. In embedded clauses, under co-reference with the subject of the matrix clause, it gets deleted (it can be "represented" as PRO):
- (8) *Oni<sub>j</sub> živut* PRO<sub>j</sub> *ne zapisa-n-o -s'*<sub>j</sub>  
 they live not registered<sub>N.SG</sub> refl  
 'They live together, not having registered themselves.' (K&N:8)
- iii. It can bind anaphors, like the reflexive *svoj* in (9):
- (9) *A u menja svoj* *rebėnok* *by-l-Ø* *vzja-t-o v Slancy*  
 and at me<sub>GEN</sub> refl<sub>M.SG.NOM</sub> child<sub>M.SG.NOM</sub> was<sub>M.SG</sub> taken<sub>N.SG</sub> in S.  
 'By me my own son was taken to Slancy.' (K&N:36)
- iv. It is able to control the deletion of co-referential DPs under coordination: *pro* in (10) can be only co-indexed with the PP *u tebjja* and not with the nominative DP *udočka*:
- (10) *Vot udočk-a<sub>j</sub> u tebjja<sub>k</sub> by-l-a by* *vzja-t-a,*  
 here fishing.pole<sub>F.SG.NOM</sub> at you<sub>SG.GEN</sub> was<sub>F.SG</sub> subjv taken<sub>F.SG</sub>  
*vot by* *pro<sub>s<sub>j</sub>/k</sub> nalovi-l-Ø* *togda*  
 here subjv caught<sub>M.SG</sub> then  
 'Had you taken a fishing pole, you would have caught a lot.' (K&N:25)
- f) The NR PPP in predicative position has different agreement properties, varying across dialects, with the IA DP:
- i. agreement between the PPP and the IA Nom DP (10), as in CSR;
  - ii. non-agreement: invariable PPP with two possible forms:
    - ii.a. masculine singular inflection in *-n (-t)*;
    - ii.b. neuter singular inflection in *-no (-to)*.
 In the latter case the DP can in turn surface with:
    - ii.b.1. nominative case, as in (9);

with *u* for ease of exposition and I will sometimes refer to such PPs as the *u*-phrase.

<sup>4</sup> Timberlake notes also that adverbials of time and space (marked Acc in the active clause) can acquire Nom and trigger agreement in the participle. The 'downgrading' of Nom is seen as a counterpart to the promotion of the *by*-phrase to the role of subject.

ii.b.2. accusative case,<sup>5</sup> as in (11); crucially Acc is attested only with neuter PPP in *-no/-to* (see section 3.2.6).

- (11) *U dedka -to merěž-u ostavle-n-o*  
 at grandpa<sub>GEN</sub> det fishnet<sub>F.SG.ACC</sub> left<sub>N.SG</sub>  
 ‘Grandpa left a fishnet’/‘A fishnet has been left by g.’ (K&N:38)

Also the agreement with the auxiliary *byt* ‘be’ is cross-dialectally differentiated, giving rise to further sub-patterns (iii-v):

- iii. Agreement between Aux, IA DP and PPP, as in (10) above, tightly matching the CSR pattern.
- iv. Agreement between Aux and IA DP, lack of agreement with the invariable PPP (in (9) above in neuter; in (12) with the masculine ending): this pattern can be treated as a subtype of ii, being the agreement induced by DP onto the Aux, but not onto the PPP.
- (12) *Krugom by-l-a ograd-a obnese-n-Ø*  
 around was<sub>F.SG</sub> fence<sub>F.SG</sub> enclosed<sub>M.SG</sub>  
 ‘A fence was built around.’ (K&N:79)
- v. Agreement between Aux and PPP, lack of agreement with the DP ((13) with neuter PPP, (14) with masculine PPP); this pattern is the counterpart to the subtype in iv and the only possible configuration when the Aux is occurring in dialects with Acc DP.
- (13) *Pereexa-n-o by-l-o dorog-a tut*  
 crossed<sub>N.SG</sub> was<sub>N.SG</sub> road<sub>F.SG.NOM</sub> here  
 ‘The road was crossed here.’ (K&N:36)
- (14) *Prjalka ne by-l-Ø ešče postavle-n-Ø na mesto*  
 spinning.wheel<sub>F.SG.NOM</sub> not was<sub>M.SG</sub> yet put<sub>M.SG</sub> in place  
 ‘The spinning wheel was not yet put back in its place.’ (K&N:79)
- (15) *Vs-ex by-l-o vzja-t-o v vojnu*  
 all<sub>M.PL.ACC</sub> was<sub>N.SG</sub> taken<sub>N.SG</sub> in war  
 ‘All were sent to war.’ (K&N:38)

<sup>5</sup> The IA DP can surface, in some contexts, also in genitive case, as in (4) or in the form of a PP with the preposition *po*. They reflect, however, regular alternations of structural case, in CSR as well as NR, with the genitive under negation and with the *po*-phrase in distributional contexts. For this reason they will not be considered in the analysis.

All the sub-types deriving from the options under point f) above are schematized in Table 1 below, providing an overview of the cross-dialectal variation with reference to the relevant examples. Note that the schema displays also the unattested combination of an accusative DP and a masculine invariable PPP, marked with the asterisk.

<i>Partc-DP agr.</i>	<i>Partc</i>	<i>Case of DP</i>	<i>Aux agr.</i>	<i>Ex.</i>
+ [ii]	(agreeing)	Nom	Partc & DP	(10)
- [i]	Masc. [ii.a]	*Acc		
		Nom [=ii.b.1]	Partc [v]	(14)
			DP [iv]	(12)
	Neut. [ii.b]	Acc [ii.b.2]	Partc [v]	(15)
Nom [ii.b.1]		Partc [v]	(13)	
		DP [iv]	(9)	

Table 1

## 2 Previous analyses of *-n(o)/-t(o)* constructions.

Reasons of space prevent a detailed discussion of previous proposals about NR constructions, so what follows is just a quick survey of the main arguments that have been put forward in the literature, where I suggest the reasons why an alternative explanation is desirable.

Addressing the *u* + NP<sub>GEN</sub> PP in terms of an oblique or quirky subject has undoubtedly been the leading idea in the approaches to NR perfect, since the appearance of Timberlake's (1976) work, where the quasi-subject properties of the *by*-phrase in NR were first identified (see point e) of section 1.2). Following this line of thought, Lavine (1999) put forward the hypothesis that the IA DP was not involved in checking the EPP, as the latter can be valued not by the former but by an 'ergative' subject, which is selected, in turn, by the derivational morpheme *-no/-to*, a syntactic head that enters the derivation [+interpretable]. In this way the clause is fully assimilated to an active one, with nominative case on the IA DP licensed not by finiteness (i.e. by an abstract case feature in T) but as a property of the clause as a whole. This entails that a head – say, AgrO – projects between *v*P and TP and licenses *structural* accusative case but does not determine the actual *morphological* case.

A partially similar approach is adopted in Tsedryk (2006), who assumes that NR has an articulated structure with two little *v* heads above the root, one licensing case and the other introducing an EA: in this case the *u*-phrase is not taken to be directly the realization of the ergative sub-

ject, but an applied argument introduced by an high applicative head, that is nevertheless co-indexed with a PRO (Agent) in the Spec of the higher  $vP$ , thereby giving rise to its agentive interpretation. Jung (2008) building on Kayne's (1993) proposal about the *be/have* parameter for the expression of possession, extends the analysis to the perfect, assuming that both possessives and perfects are dominated by a BE-phrase and both the possessor and the agent are arguments, the former of a nominal structure, the latter of a verbal one: in this fashion the *u*-phrase is again treated as an ergative subject, whereas the parameter responsible for the Nom/Acc alternation is reduced to the alternation *n/v* in the light verb projection, whit *n* able to turn a verbal projection into a nominal one.

However, these proposals, in assigning the *u*-phrase the role of subject of the sentence, seem to ignore that this PP may be omitted, thus allowing impersonal or genuinely passive readings, as in (13). The cross-dialectal variation, on the other hand, is considered in full only by Jung, whose articulated structure coherently generates also the oblique subject, but this system as well leaves the optionality of the *u*-phrase rather vague and requires an overall machinery that is very costly in terms of movement required to generate the configurations that it wants to account for.

### 3 Analysis

#### 3.1 *The framework*

My proposal is based on the framework of unification of morphology and syntax developed by Manzini & Savoia (2007; 2008; hereafter M&S). In particular I will assume their claim that morphological structures are identical to syntactic structures (i.e. syntax and morphology are built on the same set of categories or categorial features) to build a device in which the EPP is checked by the neuter inflection *-o* in an expletive-like fashion. Another general principle of M&S's system that will be adopted here is the representational nature of grammatical relations, which entails that: a) arguments are merged directly in the position where they surface (no movement operations); b) chains are not a by-product of the derivation, but actual primitives of LF interface; in this respect, agreement will be conceived as identity or, better, compatibility of referential properties that enter a chain relation.

As for the EPP, M&S agree with Chomsky (1995) in identifying the crucial property of the subject in the definiteness property D. However, in their system, where the distinction between a feature and its value is

dispensed with and consequently there are no more abstract features but just the elements expressing them, the EPP cannot be reduced to the strong feature D in T that in standard derivational systems requires movement of a DP to Spec, TP, or the insertion of an expletive. D, instead, is conceived both as the denotational property and the element expressing it. Following the idea that the EPP can be checked directly by the agreement inflection of the verb (cf. Alexiadou & Anagnostopoulou (1998)), the D/EPP position(s) can be diversely lexicalized by a) a subject DP, b) a subject clitic, c) an expletive, or d) the agreement inflection. In close relation with that, M&S also propose that each one of the basic positions of the verb (V and I), and C as well, projects its own full set of nominal positions, including D, N and Q, the latter two being, respectively, the category projected by the IA and a position hosting clitics that have the property of indefinite quantification, i.e. that can be quantified over. From that follows the basic sentential skeleton in 0 below.

(16) [D [Q [N [C [D [Q [N [I [D [Q [N [V

In order to account for the variation found in NR constructions, I will simply propose that it depends, according to the principles just exposed, on the way pieces of morphology, like the inflectional head *-n-* of the participle and endings as *-o* (neuter) and *-a* (feminine), satisfy the EPP. If this approach is on the right track, then the notion of quirky subject can be abandoned as an alternative device for EPP checking (relying on simpler assumptions, as I will try to prove) becomes available. This also eliminates the need for empty categories like *pro*, at least for the NR cases.

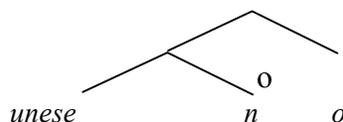
### 3.2 Morphological analysis

I take it that *uneseno* of ex. (1) corresponds to the simple structure in (17):<sup>6</sup>

<sup>6</sup> For the time being, the structure in **Error! Reference source not found.** reflects just the morphological segmentation of this form, without labels for elements and projections, as will be made clear as we proceed further. I will notate  $\surd$  (root) the predicative base of the verb *unes-*, abstracting away from the status of the vowel /e/, not being relevant for the discussion whether it is part of the root or inserted for phonological reasons.

<sup>7</sup> The introduction of an argumental role by way of an operator-variable mechanism is not

(17)



The *-n-* affix, attaching to the stem, changes the argumental structure of the verb, assigning theta-roles to positions that are different from those of the active construction. Leaving aside for now what happens with the EA and with case (whether they get ‘absorbed’), we observe that, exactly as in Romance participles, the participial inflection ‘picks up’ the IA of the verb giving rise to an ‘ergative’ syntax (Burzio 1986). We can then take *-n-* (and its allomorph *-t-*) as a *bona fide* middle-passive affix, i.e. an element expressing the IA of the verb or, more properly, establishing a relation between an argumental slot (the IA) and the EPP position, which is in turn independently realized. In this respect *-n-* behaves analogously to an object clitic, though in word-internal position, with the same mechanism identified by Roussou (2009) for the *-th-* morphology in Modern Greek middle-passive. Provisionally we can therefore consider *-n-/t-* as one of the N positions in the sentential skeleton in 0.

### 3.2.1 How it works

On the basis of the discussion that precedes, the middle-passive affix *-n-/t-*, can be conceived as an *operator* that maps an argumental slot to the EPP position: *-n-* introduces the IA as a *variable* which, as such, must be necessarily bound in order to receive an interpretation at LF. According to the adopted framework, a chain relation must be produced at LF between the IA and the EPP, indicating their identity (see §3.1). If, by hypothesis, only surface elements are actually part of syntax, the sole possible binders for the variable introduced by *-n-* are the remaining inflectional material (the agreement inflection *-o*) or the DP corresponding to the IA. Turning back to the categorization of *-n-* within the sentential structure 0, we are now in a position to reconsider this element according to its operator status: recalling that it assigns the IA slot to an independently realized EPP position, it is natural to assume that it occupies one of the Q position, as in (18) below.



### 3.2.3 *Participle with zero ('masculine') ending*

For participles with invariable masculine zero ending, i.e. no ending at all, we can speculate, pursuing the line of reasoning outlined above, according to which only elements that surface are in the syntax, that the EPP position be lexicalized by the sole DP. Reverting back to the operational scheme introduced above, we have the following steps: 1) the variable introduced by Q needs binding to receive an interpretation at LF (chain relation between the IA and the EPP slot); 2) the only element able to act as a binder in this context is the full DP that expresses the IA.

The operations involved in this configuration are actually the same ones taking place in clauses with *-no/-to* + DP<sub>NOM</sub>, just one step is skipped, namely the introduction of an argumental variable by D (*-o*); the endpoint of the operation, however, is still linked to the DP, which binds directly the variable introduced by the middle-passive inflection.

If this analysis relying on the functioning of *-n-* and *-o-* is correct, the contrast between *no*-dialects (like (1), (9) or (13)) versus *n*-dialects ((12),(14)) resembles closely the opposition in Romance between Northern Italian dialects, where a subject clitic is obligatorily present and may duplicate a subject DP, and languages like French where a subject clitic and a subject DP are mutually exclusive, though one or the other must fill the EPP position. The parameter of variation is therefore amenable to some version of the null subject parameter, albeit as a micro-parameter for structures introduced by *-n-/-t-*.<sup>8</sup>

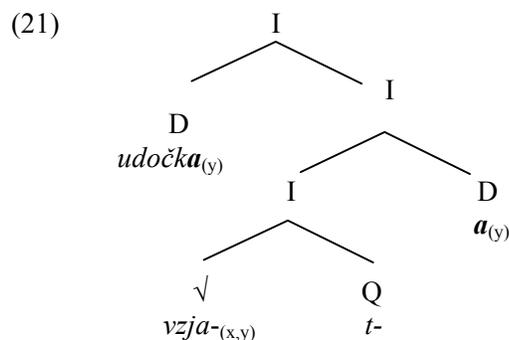
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a peculiar behavior of the middle-passive inflection, but we may assume that some  $\lambda$ -abstraction over variables is the general way to introduce arguments in grammar, where saturation of theta-roles obtains through valuation of  $\lambda$ -abstracts, as in Adger & Ramchand (2005) and, particularly, Butler (2004). Then, it is possible to think that *-n-/-t-* carries something like the [ $\Lambda$ ] feature proposed by these authors, albeit without recourse to an unvalued/uninterpretable device of feature checking: the *-n-* inflection simply abstracts over the internal argument *y* of *unese-* and gets valued by merger of *-o* immediately above it. Thanks to an anonymous reviewer for pointing out this issue.

<sup>8</sup> The null subject parameter is formulated by M&S in terms of different ways of lexicalizing the D/EPP feature: a) by the inflection of the finite verb – Italian; b) by a specialized D head (a subject clitic) that can double a full subject DP – Northern Italian Dialects; c) by a DP – English; d) by a DP *or* a specialized D head – French and Ladin dialects. The b) type would be then the analogue to *no*-dialects (*-o* being the counterpart to a subject clitic), whereas the c) and d) types could both in principle correspond to *n*-dialects (D/EPP satisfied by the full DP): however, as far as the D/EPP position is filled by the IA because of the middle-passive morpheme, there cannot be a full isomorphism with the patterns outlined above. What is important here is that the parameterization lies on the same principles, i.e. the way of lexicalization of the D/EPP position(s).

3.2.4 *Agreeing forms*

Consider now participles agreeing in gender and number with the DP as (10) ('canonical' passive, as in CSR). We can assume that the same structure assumed for non-agreeing forms underlies also this pattern:



The identification of the word-internal D (-*a*) with the DP *udočka* occurs here not by existential closure but in virtue of some referential property shared by the two elements.<sup>9</sup> If Q (-*t*-) introduces the IA as a variable that has to be bound, we can think of the -*a* ending as being able to fulfill this binding requirement by occupying a D position and thus checking the EPP, exactly as -*o*. However, -*a* is clearly associated with a nominal class, the one which commonly qualifies its members as the part of a natural class, the feminine gender. Being also the DP associated to this class, the identification of the D position with the DP is produced precisely because of the compatibility of referential properties of D with referential properties of the DP, i.e. the property of nominal/natural class.

Turning back to the non-agreeing configurations with -*o*/ $\emptyset$  invariable endings, we can thus qualify their opposition to the pattern just reviewed as a predicational-type (non-)agreement (*Non-Agr*-dialects as *pereexano doroga*) versus a referential-type agreement (*Agr*-dialects as *udočka vzjata*). Actually this is the same parameter, well known in the literature, setting apart French from English in expletive contexts of finite clauses, where the former agrees with the expletive *il* in (22), whereas the latter with the associate *some boys* in (23):

<sup>9</sup> Word order (DP-participle or participle-DP) is not relevant for the discussion here, as well as some details (copula and subjunctive particle *by*) that are in fact omitted in (21).

- (22) *Il vient des enfants* (lit. it comes some boys)  
 (23) *There come some boys*

*Non-Agr*-dialects thus pattern with French in lacking an agreement relation between D (the verb inflection in French) and the argument DP, whereas *Agr*-dialects repeat the conditions found in English, where an agreement relation between the DP and the verb inflection actually holds.

### 3.2.5 *The external argument*

While the *-n/-t-* inflection in Q assigns the IA *y* to the EPP position, the EA *x* remains unassigned as a free variable. As such, it may: a) be lexicalized by way of a *by*-phrase, i.e. the *u*-phrase; b) be interpreted as a generic or implicit argument, producing the impersonal reading of (13). Being unassigned, the EA may be even suppressed as in (24), which admits of a double reading (impersonal-passive or anticausative).

- (24) *Saxarnic-a kudy-to dēva-n-o*  
 sugar.bowl<sub>F.SG.NOM</sub> somewhere stuck<sub>N.SG</sub>  
 ‘The sugar bowl has been stuck/is stuck somewhere.’ (OB:158)

The only option that seems to be excluded is the identification of *x* with the EPP argument, in other words the reflexive reading, which is possible in some dialects when the reflexive clitic *-sja* intervenes, as in *zapisanos*’ in (8).<sup>10</sup> Anyway, several other factors concur in determining the possible readings, including animacy features of the IA, the semantics of the predicate and most likely also pragmatic conditions.

### 3.2.6 *The Accusative pattern*

The occurrence of Acc on a noun that is the only overt argument of the clause (i.e. there is no Agent in Nom) is reminiscent of constructions like Spanish existentials, as in (25) (with visible Acc on clitics, cf. (26b)), or, even more closely of facts like the Nom/Acc alternation on the IA in Sakha, discussed by Baker & Vinokurova (2010), as in (25) – their ex.

- (25) a. *Hay un hombre en la habitación*    b. *Lo hay*  
           has a man    in the room                    him has

<sup>10</sup> In the other example with *-s’/-sja, oborvana-s’* in (6) one of the possible readings is again the anticausative one, which is indeed emphasized by the reflexive clitic. The reflexive reading, instead, is ruled by the semantics of the IA, which is inanimate.

- (26) ‘There’s a man in the room.’                      ‘He’s there.’ (*Spanish*)  
*Caakky/caakky-ny aldjat-ylyn-na*  
 cup/cup<sub>ACC</sub>                      break<sub>PASS-PAST.3SG</sub>  
 ‘The cup was broken.’    (*Sakha*)

The cross-linguistic spread of such patterns seems to suggest that the Nom/Acc alternation may not be a particular idiosyncrasy of elements selecting for Acc in place of Nom. As Baker & Vinokurova argue, Acc might possibly be assigned not by agreement with a functional head but in a configurational fashion, depending on other elements in the clause. Given this conjecture, and turning back to the observation that Acc on the IA is attested in NR only with neuter participles with the *-o* ending (no Acc with masculine zero ending, i.e. no *-n* morphology alone), an intuition that is worth exploring is that the Acc configuration must have something to do with the *-o* inflection.

To implement this idea I adopt Marantz's (1992) theory of Dependent Case, that require a second position to be present in the local domain of the V+I complex to assign Acc. Marantz proposes that morphological case is always assigned according to the Case Realization Disjunctive Hierarchy, a list including four points: a) lexically governed case; b) “dependent” case (accusative and ergative); c) unmarked case (environment sensitive); d) default case. Basically, this is a precedence order: going down the list as soon as a case affix finds some case feature that it is eligible for, it takes that case and leaves the list. The “dependent” cases (Acc and ergative) are assigned by V+I to one argument position in opposition to another argument position, hence Acc (or Erg) on an NP is dependent on the properties not only of the NP itself but also of another NP position governed by V+I. The rule is stated as follows: dependent case is assigned by V+I to a position governed by V+I when a distinct position governed by V+I is: a) not “marked” (not part of a chain governed by a lexical case determiner); b) distinct from the chain being assigned dependent case. If dependent case is assigned up to subject we get Erg, if it is assigned down to the object we get Acc.

With this background, and recalling that *-n-* and *-o-* are inserted in syntactic positions, an account for the Acc configuration in NR is now at hand. Hence, I propose that that the *-o* ending is again an expletive clitic, but able to lexicalize the EA: its expletive nature makes it possible for it to still fill a D/EPP position, whereas its interpretation remains dependent on a *by*-phrase or generic/implicit. The EA is thus introduced in its

turn as a variable argument, getting identified at LF with the *by*-phrase or remaining a free variable, therefore triggering an impersonal or anticausative reading.<sup>11</sup>

If then *-o* is an expletive we obtain a configuration where conditions that must hold for dependent case to be assigned are met. In fact, we have both a position (*-o*) not assigned a lexically governed case and a distinct nominal position (*merěža* in (11)) governed by the same V+I complex and likewise not assigned a lexically governed case, which therefore falls under point b) of the hierarchy (“dependent” case). This is enough for the verbal complex (*ostavle-n-*) to assign Acc to the object or, in other words, for *-o* to license Acc on *merěža*.<sup>12</sup>

To conclude, the parameter involved in the variation between a *Nom*-dialect as (13) and an *Acc*-dialect as (11) can be set as the argumental role that the morpheme *-o* can lexicalize: the IA or the EA respectively.

#### 4 Conclusions

In this paper I tried to show that a theory that equates morphological structures to syntactical ones has several advantages, in terms of economy, in accounting for the rather extreme variation that we find in NR participial constructions, for example in presupposing one structure for different patterns. In particular I proposed that a piece of morphology, -

<sup>11</sup> Saying that *-o* in the Acc pattern lexicalizes the EA *x*, amounts to admit that the nature of Q (*-n-*) as an operator assigning the role *y* to the D/EPP position is somehow altered. A conjecture that may be entertained is that D (*-o*) could possibly be inserted in the EPP position as directly associated to the EA and consequently the operator Q should skip over a position and assign interpretatively the variable *y* to the other available position, the DP. This is however an open issue in the theory that needs to be investigated.

<sup>12</sup> A reviewer raises the question whether in a structure like (20) the case being licensed is actually Acc, given the fact that it is the DP that c-commands *-o* (and not the other way round), where Marantz’s rule requires that the case that is assigned “up” be Erg, not Acc. However, I think there are two arguments that justify the given account. First, rather trivially, Russian and NR dialects do not have a distinct morphological Erg case (or any analogue that in certain tenses/aspects/moods systematically marks the subject of a transitive verb). Secondly, and more importantly, Erg is assigned to the subject when it c-commands an object that didn’t get lexical case, but precisely in this case we have assumed that it’s *-o*, filling the EPP position, that is the subject, not the DP. Then, it is plausible that the rule operates just because there is another argument position under the same V+I complex, irrespectively of whether this position is lower or higher. It is also possible to assume that the Acc configuration may have a structure different from (20), with the DP in a lower position, but reasons of uniformity with the other configurations seem to suggest that this is not the case.

*n-/-t-*, acts as an operator, able to take in its scope the arguments of the verb, and that inflections traditionally regarded as a gender/number agreement contribute to the saturation of argumental roles and to the EPP, so to dispense with the notion of quirky subject, at least for NR.

This approach correctly predicts an apparent idiosyncrasy in the variation, that is, the absence of Acc when the participle is masculine (point ii.a in Table 1), and makes it possible to resort back to parameters already known in the literature to account for the variation. Reasons of space did not allow to discuss the patterns of agreement with the copula and the binding properties of the *u*-phrase (within a theory devoid of the notion of quirky subject), a task that I leave for future research.

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## A Note on Paucal, Agreement and Case

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This paper aims to contribute to the debate on the morpho-syntactic status of nominal forms licensed by the numerals “two”, “three”, and “four” in Serbo-Croatian (SC hereafter). It provides additional support for the intuitively plausible, though often challenged view, that nouns in these contexts require a special, paucal form. I also argue that the system presented here, which employs abstract binary features and markedness, offers a fairly simple explanation for some complex, puzzling facts regarding the distribution of SC quantifiers and oblique case.

### 1. Paucal Numerals: Some General Facts

SC quantifiers can roughly be divided into two main groups: adjectival and non-adjectival quantifiers. The former are in terms of syntactic features (almost completely) dependent on the noun they modify, i.e., although they determine its number, they agree with the modified noun in case and gender, as illustrated in (1). The latter, on the other hand, do not show any agreement with the noun they modify; rather, the noun which combines with such quantifiers necessarily has the genitive plural form (genitive assigned this way is therefore often referred to as “genitive of quantification”). This is shown in (2):

- (1) a. jedan / svaki čovek - svi ljudi  
one<sub>NOM/MASC</sub> every<sub>NOM/MASC</sub> man<sub>NOM/SG</sub> all<sub>NOM/MASC</sub> men<sub>NOM/PL</sub>  
b. jednim/ svakim čovekom - svim ljudima  
one<sub>INSTR/MASC</sub> every<sub>INSTR/MASC</sub> man<sub>INSTR/SG</sub> all<sub>INSTR/MASC</sub> men<sub>INSTR/PL</sub>

- (2) a. pet/osam/nekoliko ljudi  
 five/eight/some men<sub>GEN/PL</sub>

The quantifiers *dva* ‘two’, *tri* ‘three’, *četiri* ‘four’ and *oba* ‘both’, however, appear to display a mixed behavior: they impose a special form on the noun, yet at the same time some of them (specifically, *dva* and *oba*) agree with it<sup>1</sup>.

- (3) a. dv-a /ob-a      čovek-a    b. dv-e/ob-e      žen-e  
 two<sub>MASC</sub>/both<sub>MASC</sub> man      two<sub>FEM</sub>/both<sub>FEM</sub> woman  
 c. tri /četiri čovek-a/ žen-e  
 three/four man      woman

Concentrating on the masculine declension, most interesting in this regard, we see that the form ‘čovek-a’ in (3) triggers gender agreement on ‘dva’ and ‘oba’. However, ‘čovek-a’ is special in that it is clearly not nominative singular (the nominative singular form is ‘čovek’, as given in (1a)), nor genitive plural (i.e., ‘ljudi’, see (2)).

Although most reference grammars simply state that ‘čovek-a’ in (3) is genitive singular (since it is homophonous with the genitive singular form given in (4)), I argue that it is in fact nominative paucal.

- (4) Slika      mladog(a) čovek-a.  
 Picture<sub>NOM</sub> young<sub>GEN/SG</sub> man<sub>GEN/SG</sub>  
 ‘A picture of a young man’

### 1.1. Why Not Genitive Singular

Taken at face value the claim that ‘čovek-a’ in (3) is genitive singular may seem satisfactory. This proposal, however, runs into a couple of serious problems. The first one concerns the status of adjectives and other attributive modifiers in the structures under consideration. Namely, we expect prenominal adjectives in the scope of these quantifiers to take the genitive singular form as well, contrary to fact.

- (5) Dv-a mlad-a /\*mlado-g(a) čovek-a.  
 Two young-?? young<sub>GEN</sub> man<sub>GEN/SG</sub>

<sup>1</sup> The somewhat archaic *nekolika* ‘some’ also falls into this group.

Although *mlad* ‘young’ in (5) takes a form ending in *-a*, the form in question does not typically represent genitive singular features. The standard genitive singular form of ‘mlad’ is ‘mladog(a)’, and this form is unacceptable with quantifiers like ‘dva’, as shown in (5). This fact requires a separate stipulation under the hypothesis that ‘čovək-a’ in (3)/(5) is the genitive singular form.

Now, most SC adjectives come in two forms: long and short (see Despić 2011 for an overview of the relevant literature) and ‘mlad-a’ in (5) looks like the short genitive singular form. Thus, on the basis of this one may argue that for some unknown reason SC adjectives are limited to their short forms when they combine with quantifiers like ‘dva’ (even though the short form is on the decline in non-nominative cases in modern SC and is paradigmatically compromised). With this stipulation ‘mlad-a’ in (5) would still be the genitive singular form.

The problem is that not all SC adjectives/attributive modifiers have short forms, and even they necessarily end in *-a* when they are modified by ‘dva’.

- (6) slika ✓mo(je)ga / \*moja brata  
 Picture my<sub>LONG/GEN/SG</sub>/ my<sub>SHORT/GEN/SG</sub> brother<sub>GEN</sub>  
 ‘Picture of my brother.’

Thus, the pronominal possessive adjective *moj* ‘my’ is limited to the long form in genitive, i.e., ‘moj-a’ is unacceptable in a typical genitive position, as shown in (6). However, even though ‘moj-a’ is clearly not the short genitive singular form of ‘moj’, it is the only possible form with a quantifier like ‘dva’:

- (7) dva \*mo(je)ga/ ✓moj-a brat-a.  
 two my<sub>LONG</sub>/ my<sub>SHORT</sub> brother

This raises an obvious question: if nouns in phrases with the quantifiers *dva* ‘two’, *tri* ‘three’, *četiri* ‘four’ and *oba* ‘both’ require the genitive singular form, why do adjectives behave differently in this respect?

The second problem concerns the participle agreement pattern displayed in constructions involving the quantifiers in question. When a phrase containing one such quantifier is in the subject position, the participle ends with *-a* (just like the noun and the adjective):

- (8) Dv-a mlad-a čovek-a su došl-a.  
 Two young man aux<sub>3P/PL</sub> arrived  
 ‘Two young men have arrived.’

The sentence in (8) exhibits a typical subject agreement pattern, i.e., all agreeing elements in (8) including the participle are characterized by the same inflectional suffix, namely *-a*. This agreement type is further illustrated by the following examples:

- (9) a. Mlad-a žen-a je došl-a.  
 Young<sub>NOM/FEM/SG</sub> woman<sub>NOM/FEM/SG</sub> aux<sub>3P/SG</sub> arrived<sub>NOM/FEM/SG</sub>  
 ‘A young woman has arrived.’  
 b. Mlad-e žen-e su došl-e.  
 Young<sub>NOM/FEM/PL</sub> woman<sub>NOM/FEM/PL</sub> aux<sub>3P/PL</sub> arrived<sub>NOM/FEM/PL</sub>  
 ‘Young women have arrived.’  
 c. Mlad-i ljud-i su došl-i.  
 Young<sub>NOM/MASC/PL</sub> men<sub>NOM/MASC/PL</sub> aux<sub>3P/PL</sub> arrived<sub>NOM/MASC/PL</sub>  
 ‘A young man has arrived.’

Only nominative subjects, however, trigger agreement on the participle in SC. The subject nominal in (10) is assigned genitive plural by the numeral *pet* ‘five’ and cannot therefore trigger agreement on the participle, i.e., the participle takes the neuter singular form, which is generally taken to be default.

- (10) Pet mladih ljudi je došl-o.  
 Five young<sub>GEN/PL</sub> men<sub>GEN/PL</sub> aux<sub>3P/SG</sub> arrived<sub>NEUT/SG</sub>  
 ‘Five young men has arrived.’

This suggests that the form *čovek-a* ‘man’ in (7) is nominative, since it triggers the same type of agreement on the prenominal modifiers and the participle. More precisely *-a* in (8) represents the features [nominative, masculine] and some number feature, which is neither singular nor plural. Following the consensus in the relevant literature I will call this number ‘paucal’. In order to maintain the genitive singular hypothesis, on the other hand, one needs to explain why the participle in (8) has the form ‘došl-a’. Since genitive subjects do not trigger agreement on the participle, the form in question would have to be feminine singular (see

the participle in (9a)) or neuter plural. That is, both the adjective ‘mlad-a’ and the participle ‘došl-a’ in (8) would on this proposal have to be analyzed as nominative feminine singular, or nominative neuter plural, even though the subject itself (i.e., *čovek-a*) is, by hypothesis, genitive masculine singular. I do not see how this proposal could be salvaged without making a number of dubious stipulations.

## 2. Formal Representation of Paucal

As discussed in detail in Corbett (2000), the paucal number is “used to refer to a small number of distinct real word entities” (Corbett 2000, 22). It is usually analyzed as an approximative number in the sense that there is no upper bound that can be put on its use (see also Harbour 2011). In Bayso, for instance, the paucal number is used to refer to a small group of individuals, from two to about six. In SC there appears to be an upper bound (namely, five) and this is perhaps one of the reasons why some authors hesitate to call the quantifiers in question paucals. Also, Corbett (2000) argues that the special form that appears with the numerals ‘two’, ‘three’, and ‘four’ in Russian, and which is almost always the same as the genitive singular, depends entirely on the presence of the numeral, and as such cannot be treated as part of the number system. Therefore the term ‘paucal’ is inappropriate in this case, according to Corbett. In SC, on the other hand, in addition to the numerals ‘two’, ‘three’ and ‘four’, the quantifiers *oba* ‘both’ and *nekolika* ‘some’ license the special form. The latter fits the “standard” definition of paucal, since it is similar to the English quantifier ‘a few’ in meaning, but it is sound quite old-fashioned.

The special form in question is diachronically a survival of the dual number, and is sometimes also referred to as the ‘count form’ (see Corbett 2000, 270). I will argue that synchronically this special form is due to the existence of a special number assigned by the quantifiers like ‘two’, which I will continue to call ‘paucal’ (to avoid any confusion). However, I will argue that in order to fully understand the nature of this number we need to decompose it into two features.

### 2.1 Number Features and Markedness

On the basis of the standard typological evidence for markedness, Nevins (2011) shows that plural is marked with respect to singular but unmarked

with respect to dual.<sup>2</sup> Since plural cannot be characterized as either a marked or an unmarked category of number, Nevins argues that we need two binary features to fully understand number categories. Nevins proposes the following decomposition of number categories into features (see also Harbour 2006, Noyer 1992):

- (11) a. Singular = [+singular, –augmented]  
 b. Dual = [–singular, –augmented]  
 c. Plural = [–singular, +augmented]  
 d. The combination [+singular, +augmented] is impossible

In addition to the feature-based representation of number in (11) Nevins argues for the following markedness statements (Nevins 2011, 421):

- (12) Context-free markedness statement:  
 The marked value of [ $\pm$  singular] is –.  
 (13) Context-sensitive markedness representation:  
 In the context [–singular], the marked value of [ $\pm$ augmented] is –.<sup>3</sup>

On this analysis the paradoxical behavior of plural with respect to markedness can be explained. Plural (as well as dual) is marked with respect to singular because it contains a marked feature-value that singular does not, namely [–singular] (see (12)). On the other hand, plural is unmarked with respect to dual (or, in other words, dual is most highly marked) because dual contains a marked feature-value that plural does not, namely [–augmented] (see (13)).

As far as the proposed features are concerned, Nevins argues that [ $\pm$ augmented] has a special status since it is always relativized to another feature. He defines [+augmented] as follows:

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<sup>2</sup> What is meant here by ‘markedness’ is morphological rather than semantic markedness (see Despić 2010 and references therein for discussion of this distinction).

<sup>3</sup> As discussed in Nevins (2011), “the appeal to context-sensitive markedness in morphology parallels its use in phonology” (Nevins 2011, 421):

(i) Context-sensitive markedness of vowel color features:  
 In the context [–back], the marked value of [ $\pm$ round] is +

- (14) a. [+F] =  $\neg$  [– F]  
 b. [+augmented] =  $\lambda P \lambda x \exists y [y \subset x \wedge P(x) \wedge P(y)]$ .

In other words, what [+augmented] means is, “given some predicate P that is true of some set  $x$ ,  $x$  is [+augmented] if there is a proper subset of  $x$  for which P is also true” (Nevins 2011, 422). A set of cardinality such as 100, for example, is [+augmented] for its value of [ $\pm$  singular] (i.e., [–singular]) because there is at least one proper set of 100 which is also [–singular]. By the same logic, sets of cardinality 1 are always [–augmented] for their value of [ $\pm$  singular] (i.e., there is no proper subset of 1 which is also [+singular]).

Now, a set of cardinality 2, which is [–singular], is special because there is no proper subset of this set which is also [–singular]. For this reason, a set of cardinality 2 is [–augmented] for its value of [ $\pm$  singular].

Going back to paucal, I believe it should be formally represented in a similar way as dual. That is, in light of the facts given in the next section I argue that paucal is in SC most highly marked; in other words, plural is marked with respect to singular but unmarked with respect to paucal.

As far as the actual features are concerned, we may represent dual and paucal with the identical set of features: [–singular, –augmented] (e.g., Bailyn and Nevins 2008, Pereltsvaig 2010). However, this solution might not be completely satisfactory, since the definition of [+augmented] in (14) is aimed to semantically capture dual, not paucal. We could therefore try to either describe paucal in terms of iterative application of the feature [ $\pm$ augmented], or find another feature.

Harbour (2011) proposes the feature [ $\pm$ additive] to formally represent paucal. Assuming the lattice-based semantics, Harbour offers the following definition of [ $\pm$ additive]:

- (15) [ $\pm$ additive] =  $\lambda P \lambda x (\neg) \forall y (Q(y) \rightarrow Q(x \cup y))$ <sup>4</sup>  
 Presuppositions:  $Q(x)$ ,  $Q \subset P$   
 (The set of elements of join-(in)complete subregion P)

The intuition behind Harbour’s analysis is that the sum of two pluralities is always a plurality, but the sum of two paucities does not always give a

<sup>4</sup> The parenthetic negation signifies  $\neg$  that is present for the minus value, absent for plus.

paucity. In other words, the plural is closed under addition, the paucal is not. Thus, [+additive] yields the plural, whereas [-additive] the paucal. A language like SC would therefore employ the features [ $\pm$ singular] (or [ $\pm$ atomic] in Harbour's terminology) and [+additive]. The SC number categories would then be decomposed in the following way:

- (16) a. Singular = [+singular, -additive]  
 b. Paucal = [-singular, -additive]  
 c. Plural = [-singular, +additive]

(16) looks almost identical to (11); the only difference is that (16) uses [ $\pm$ additive] instead of [ $\pm$ augmented]. In terms of markedness, I argue that [ $\pm$ additive] behaves in the same way as [ $\pm$ augmented]. Thus, (17) and (18) parallel (12) and (13), respectively:

(17) Context-free markedness statement:

The marked value of [ $\pm$  singular] is -.

(18) Context-sensitive markedness representation:

In the context [-singular], the marked value of [ $\pm$ additive] is -.

The final assumption that we need to make here is that only the quantifiers *dva* 'two', *tri* 'three', *četiri* 'four' and *oba* 'both' can license [-additive], and therefore impose the paucal form on the modified nominal and agreeing elements. The suffix *-a* in (8), repeated here as (19a), thus stands for nominative, masculine [-singular, -additive]:

- (19) a. Dv-a mlad-a čovek-a su došl-a.  
 Two young man aux<sub>3P/PL</sub> arrived  
 'Two young men have arrived.'  
 b. /-a/  $\Leftrightarrow$  [nom, masc, -singular, -additive]

## 2.2 Paucal and Oblique Case

A particularly interesting and at the same time confusing fact about SC paucal quantifiers is that they assign plural to the modified noun in oblique cases, as shown below:

(20)

Two men	
a. Nom/Acc	Dv- <b>a</b> čovek- <b>a</b>
b. Gen	Dva- <b>ju</b> ljudi
c. Dat/Loc/Instr	Dva- <b>ma</b> ljudi- <b>ma</b>

To deal with this issue I will assume that marked features can accumulate creating a type of “markedness overload”, which in certain cases may be resolved by different postsyntactic operations (e.g., Calabrese, 2005, 2008, Despić 2010). For instance, oblique cases are more highly marked than non-oblique cases, paucal is more highly marked than plural, which is more marked than singular etc. In the case of oblique paucals in particular, two marked features are combined; oblique case and paucal number (i.e., [-singular, -additive]). One way of resolving a situations of this type is to delete a privative feature (i.e., *impoverishment*, see Halle and Marantz 1993). Another way is to switch a binary feature to the unmarked value (e.g., Noyer 1992). I propose that in this particular case [-additive], which is the marked value of [±additive] in the context of [-singular] (see (18)), is turned to the unmarked value, namely [+additive], in the context of an oblique case. This accounts for the emergence of plural in (20b/c). Furthermore, I propose that the suppletion rule which changes ‘čovek’ to ‘ljud’ applies in the context of [+additive], as illustrated in (21b). Obviously, the rule in (21a) has to be ordered prior to (21b):

- (21) a. [-singular, -additive] → [-singular, +additive] / \_\_ [oblique]  
 b. √čovek → ljud / \_\_ [+additive]

Now, I believe that a system set up this way offers a fairly simple explanation for certain well-known, puzzling SC facts, some of which are of considerable complexity. As discussed in a number of works (Franks 1994, 1995, 2002, Bošković 2006, 2008...), phrases containing quantifiers which assign genitive plural to their complements (the numerals *pet* ‘five’ and above, *mnogo* ‘many’ etc.) cannot occur as objects of oblique case assigning verbs. In (22) below the verb *upravljati* ‘to manage’ assigns instrumental case:

- (22) \*Marko upravlja pet kompanija.  
 Marko manages five companies<sub>GEN/PL</sub>  
 ‘Marko manages five companies.’

The same quantifiers, however, are grammatical as complements of oblique case assigning prepositions, such as *sa* ‘with’, which also assigns instrumental:

- (23) Marko razgovara sa pet žena.  
 Marko razgovara with five women<sub>GEN/PL</sub>  
 ‘Marko talks with five women.’

The paucal quantifiers behave somewhat differently in the same structural contexts. The phrase ‘dve žene’ as the object of the verb *upravljati* ‘manage’ in (24) necessarily takes the instrumental form (the nominative form is ungrammatical):

- (24) a. Marko upravlja dvema kompanijama.  
 Marko manages two<sub>INSTR/PL</sub> companies<sub>INSTR/PL</sub>  
 ‘Marko manages two companies.’  
 b. \*Marko upravlja dve kompanije.  
 Marko manages two<sub>NOM/PAUC</sub> companies<sub>NOM/PAUC</sub>  
 ‘Marko manages two companies.’

However, as a complement of the preposition *sa* ‘with’, the same phrase can take either the instrumental or nominative form.<sup>5</sup>

- (25) a. Marko razgovara sa dvema ženama.  
 Marko razgovara with two<sub>INSTR/PL</sub> women<sub>INSTR/PL</sub>  
 ‘Marko talks with two women.’  
 b. Marko razgovara sa dve žene.  
 Marko razgovara with two<sub>NOM/PAUC</sub> women<sub>NOM/PAUC</sub>  
 ‘Marko talks with two women.’

This is summarized below:

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<sup>5</sup> The instrumental form sound somewhat old fashioned, but it is certainly acceptable (I come back to this in section 3).

(26)

	5 and above	Oblique Paucals	Nominative Paucals
Verb <sub>OBL</sub>	*	✓	*
Preposition <sub>OBL</sub>	✓	✓	✓

Now, to explain these facts we only need to make two simple, independently motivated assumptions in addition to the analysis developed so far. First, as discussed by a number of authors (e.g., Bošković 2006, Franks 2002, etc.) oblique case assigned by a verb (which I mark as OBL<sub>V</sub>) is clearly different from the one assigned by a preposition (marked as OBL<sub>P</sub>). I therefore propose (27):

(27) OBL<sub>V</sub> cannot be deleted.

Second, I assume that phrases containing the genitive plural assigning quantifiers (e.g., ‘5’ and above) are simply incompatible with oblique case in general i.e., they cannot be assigned oblique case (there is a sort of “case conflict”, as has been discussed extensively in the literature).

(28) OBL is incompatible with quantifiers which assign gen/pl.

Consider first (25a/b). The paucal object is assigned OBL<sub>P</sub> by the preposition *sa*. This creates a marked context involving two marked features:

(29) \*[[–singular, –additive] OBL<sub>P</sub>] /+\_\_\_\_]w

This is resolved in one of the following two ways: (i) [–additive] which is the marked value for [±additive] in the context of [–singular] is turned to [+additive] (see (21a), repeated below as (30)), which results in the object phrase taking the instrumental plural form (see also (20b/c)), or (ii) OBL<sub>P</sub> is deleted, since unlike OBL<sub>V</sub> it can be deleted in marked contexts; consequently, the object takes the nominative paucal form.<sup>6</sup>

<sup>6</sup> I assume that nominative here is the default case. See Despić (2010) for arguments that nominative in SC (and Slavic) is unmarked with respect to non-nominative cases. The fact that, in contrast to OBL<sub>V</sub>, OBL<sub>P</sub> can be deleted can also be seen as a reflection of the

(30) [-singular,-additive] → [-singular,+additive]/\_\_ [oblique]

The second option, however, cannot be applied in the case of (24), since  $OBL_V$  assigned by *upravljati* ‘manage’ cannot be deleted, by hypothesis (e.g., (27)). The only way to avoid the constraint in (29) in this case therefore is to switch [-additive] to [+additive], which changes the number from paucal to plural, without affecting the instrumental case.

The markedness constraint given in (29) does not apply in the case of (22) and (23) since there is no paucal number (i.e., [-singular, -additive]). The problem with (22) is that  $OBL_V$  assigned by *upravljati* is incompatible with the object phrase containing the numeral *pet* ‘five’, but due to (27) it cannot be deleted. Structures of this type are therefore always ungrammatical.  $OBL_P$  in (23), on the other hand, is also incompatible with the object phrase, but since it is assigned by an oblique case assigning preposition it can be deleted:

(31)  $OBL_P \rightarrow \emptyset / ]_Q \_\_\_ \text{ where } Q \text{ assigns gen/pl}$

Thus, the seemingly random facts given in (22)-(25) can be reduced to a handful of basic factors; i.e., the principles that underlie (22) and (23) essentially govern the contrast between (24) and (25) as well. The key observation, however, is that due to the nature of paucal and  $OBL_P$  the marked context in (25) can be resolved in two different ways: (i) by deleting the marked feature  $OBL_P$ , a strategy that also makes (23) grammatical in contrast to (22), or (ii) by turning the marked feature [-additive] to [+additive].

### 2.3 Paucal and Pronouns

The analysis presented here can also shed some light on the following contrast:

(32) \*[Dva njih] / ✓[njih dva] su došla.  
 Two them<sub>GEN/PL</sub> them<sub>GEN/PL</sub> two aux<sub>3P/PL</sub> arrived

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fact that, unlike objects of oblique case assigning verbs, oblique case assigning PPs are in general optional. Thus, PP *sa dvema ženama* in (25) is optional, whereas the instrumental object of the verb *upravlja* in (24) is not.

- ‘Two of them arrived.’  
 (33) ✓[Pet njih] / ✓[njih pet] je došlo.  
 Five them<sub>GEN/PL</sub> them<sub>GEN/PL</sub> five aux<sub>3P/SG</sub> arrived  
 ‘Five of them arrived.’

As shown in (32), when SC pronouns combine with a paucal quantifier, they necessarily precede it. On the other hand, they may either precede or follow a non-paucal quantifier (e.g., (33)). In each case they take the genitive plural form. I propose that this is because pronouns in SC simply do not have the paucal form (or, correspondingly, they cannot have [-additive] assigned by the paucal quantifiers). This is not uncommon; Corbett (2000) observes that Bayso has the paucal number system in nouns, but not in its pronouns (Corbett 2000, 22). Since it cannot be assigned [-additive] by the paucal quantifier, the pronoun in (32) moves out of its scope, which explains the word order. This issue does not arise in (33), where both orders are ultimately possible.

### 3. Summary and Some Open Questions

In this last section I want to point out a few more interesting things about the paucal quantifiers in SC that deserve to be mentioned, but which due to space limitations I cannot discuss in detail.

The SC oblique paucals behave quite exceptionally with respect to agreement. The agreeing paucal numeral *dva* expresses gender agreement on a separate morpheme in oblique cases, as shown in (34) and (35). For instance, the morpheme *-e-* in (34a) expresses feminine gender agreement, while *-ma* represents instrumental plural. This agreement pattern is very different from the standard SC *portmanteau* morphology, in which a single morpheme cumulatively expresses case, number, and gender:

- (34) a. Dv - e - ma žena-ma.      b. Dv - a - ma dečaci-ma  
           |    |                    |                    |                    |                    |  
           **[fem]** [instr, pl]    [inst, pl]      **[masc]** [instr, pl]    [instr, pl]  
           ‘Two women’                    ‘Two boys’
- (35) a. Dv - e - ju žena.      b. Dv - a - ju dečaka  
           |    |                    |                    |  
           **[fem]** [genitive]            **[masc]** [genitive]

‘Two women’

‘Two boys’

This morphological quirk may, however, explain why (25a) sounds old fashioned in comparison to (25b), and is not very productive in the modern language (this is simply not something that native speakers are used to nowadays). Since the morpheme that expresses gender agreement in (34)-(35) also expresses nominative case in nominative phrases (compare ‘dv-e-ma ženama’ to ‘dv-e žene’) a number of questions regarding the nature of case can be raised; i.e., “Is nominative featurally represented, or is it just the absence of case?”, “Do (34) and (35) involve some type of case stacking?” (e.g., Pesetsky 2010, Richards 2007) etc... At this point I have to leave such questions for future research.

To summarize, I have argued in this paper that the nominal form that appears with the so-called “paucal” quantifiers in SC is indeed a special nominative form (not the genitive singular form). The form in question involves a special number (i.e., paucal) and triggers agreement just like the “regular” singular and plural nominative forms do. I have proposed a binary feature based model, in which paucal is represented by a combination of the features [–singular,–additive]. I have also discussed how the proposed analysis may improve our understanding of the interaction between numerically quantified phrases and oblique case in SC.

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## Negation, Aspect and Time Conjunctions\*

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### 1. Introduction

In English, the preposition *until* is grammatical only in atelic sentences (1-a). Using *until* in telic sentences yields ungrammaticality (1-b), unless the telic sentence is negated (1-c). There is an ongoing disagreement about the proper treatment of the facts. The two existing approaches argue either that the contrast follows from the fact that negation has a stativizing effect (Krifka (1989), de Swart (1996)), or that there is no principle explanation and *until* must be treated as semantically ambiguous, namely, the meaning of *until* is either durative, or punctual (Karttunen (1974), Giannakidou (2002)). The punctual *until* is claimed to be a negative polarity version of *until* and as such can be found only in negated sentences.<sup>1</sup>

- (1) a. The princess slept until midnight.  
b. \* The princess arrived until midnight.  
c. The princess didn't arrive until midnight.

This paper investigates English *until* and its closest Czech counterpart – *dokud* – and concentrates on their interaction with aspect

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<sup>1</sup> This summary of the two theories is very schematic but for the reasons of space I must refer the interested reader to Giannakidou (2002) where both approaches are compared thoroughly.

and negation. In particular, I provide evidence in favor of the non-ambiguity approach to both conjunctions, showing that *dokud* and *until*, despite their meaning difference (subinterval vs. succession), behave similarly when it gets to their interaction with downward entailing operators and aspect. Furthermore, I argue that the non-ambiguity treatment of *dokud* and *until* can be pursued, even if we don't accept the stativizing nature of negation. In other words, my solution is a mixture between the two approaches sketched above. I will argue that *dokud* can and should be analyzed as a reversed implication with basically durative meaning, thus supporting the view of *until* as non-ambiguous expression, but I will do so (instead of proposals like de Swart (1996) and Krifka (1989) where negation is treated as stativizer) sticking to the zero hypothesis, namely that negation doesn't have any aspect shifting properties.

## 2. Puzzle

As it has been shown already in the previous section, *until* requires a particular aspect and the Czech conjunction *dokud* is similar in this respect. The basic empirical observation concerning *dokud* is that it occurs embedded in sentences containing atelic aspect (2-a), but it becomes ungrammatical when its sentence is telic (2-b). Negation seems to reverse the pattern, as we see in (3). Sentences (2-b) and (3) form a minimal pair distinguished only by negation. It seems that there is a common property of *until* and *dokud*: both expressions are sensitive to the telicity of their sentences. They appear in atelic sentences only, but surprisingly when telic sentences containing *dokud* and *until* are negated, both expressions are acceptable – see example (1) repeated here as (4).<sup>2</sup>

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<sup>2</sup> Note on the differences: I compare *dokud* and *until*, the first one is coordination only, the second one acts either as a coordination or as an adverbial. But I follow Giannakidou (2002) in analyzing both types of English *until* as semantically same, differences stemming only from their embedding contexts. The second difference is the way Czech and English code telicity – in Czech perfective aspect on verb like *probudit* ('wake up') enforces the telicity of the sentence, in English the lexical semantics of achievements like *arrive* causes the whole sentence to be telic. But again I assume that the different ways the telicity builds up in Czech and English sentences doesn't change how *dokud* and *until* are aspectually sensitive to their contexts. The third difference is that with atelic sentences like in (2) *dokud* can be paraphrasable as English *while*, it has a subinterval

- (2) a. Petr četl knížku, dokud Marie spala.  
 Petr read<sub>IMPERF</sub> book DOKUD Marie sleep<sub>IMPERF</sub>.  
 ‘Petr was reading a book while Marie was sleeping  $\sqrt{dokud}$ +telic
- b. \*Petr četl knížku, dokud se Marie probudila.  
 Petr read<sub>IMPERF</sub> book DOKUD Marie sleep<sub>PERF</sub>.  
 ‘Petr was reading a book while Marie woke up’ \* $\sqrt{dokud}$ +telic
- (3) Petr četl knížku, dokud se Marie neprobudila.  
 Petr read<sub>IMPERF</sub> book DOKUD Marie woke\_up<sub>IMPERFNEG</sub>.  
 ‘P. was reading a book while M. didn’t wake up’  $\sqrt{dokud}$ +NEG+telic
- (4) a. The princess slept until midnight. (=1)  
 b. \* The princess arrived until midnight.  
 c. The princess didn’t arrive until midnight.

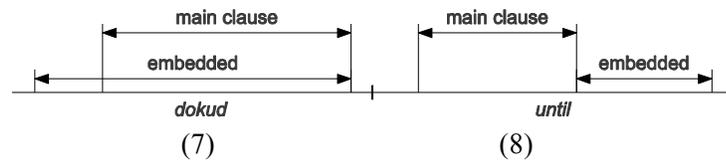
Even if *until* and *dokud* act similarly with respect to their aspectual sensitivity, they are at least on surface semantically very different. The first difference, let’s name it **property 1**, is a basic semantic difference: *until* (without negation) denotes succession of two events (see 5-a) but *dokud* (without negation) denotes subinterval relation of two events (see 5-b). I further assume (following Krifka 1989) the temporal trace function  $\tau$ . This function maps an event to its temporal trace, or ‘run time’. For English *until* in (5-a) it means that the event of stirring with a metal spoon precedes the event of dissolving the sugar. The function  $\tau$  mapping the event of the main clause denotes the time interval preceding the result state time interval, which follows the moment of the complete sugar dissolution. For Czech *dokud*, the intuitive meaning of (5-b) is that the event denoted by the main clause is contained in the bigger event denoted by the embedded clause. Let’s model this intuition with the subset relation – the run time of the embedded event is a superinterval of the run time of the main event – see (5-b). Surprisingly with negated telic verbs in both sentences, as in (6-a), Czech *dokud* intuitively denotes the succession as well as English *until* in (5-a). (6-a) means that the event of Petr’s finishing reading the book follows the event of Mary’s return. A similar English sentence with both telic sentences and only the main verb negated is in (6-b). There the intuitive meaning is alike: the event of the embedded clause must precede the event of the main clause. Let’s

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time meaning, as I explain further.

hypothesize that the inclusion relation is basic meaning of *dokud* (see figure (7)) and that the consecution is the basic meaning for *until* (see figure (8)).<sup>3</sup>

- (5) a. Stir with a metal spoon until the sugar has dissolved.  $\tau(\text{stir}') < \tau(\text{dissolve}')$   
 b. Petr četl knížku, dokud Marie plavala.  $\tau(\text{read}') \subset \tau(\text{swim}')$   
 Petr read<sub>IMPERF</sub> book DOKUD Marie swim<sub>IMPERF</sub>  
 ‘Petr was reading a book, while Marie was swimming.’
- (6) a. Petr nepřečetl tu knížku, dokud se Marie nevrátila.  
 Petr read<sub>PERFNEG</sub> the book DOKUD REFL Marie returned<sub>PERFNEG</sub>  
 ‘Petr hadn’t finished reading the book until Mary returned.’  
 $\tau(\text{return}') < \tau(\text{read}')$   
 b. The EC will not lift its sanctions until that country makes political changes.



Let’s look at another property which is especially important with respect to *dokud*. I will call it **property 2**. Slavic languages belong to

<sup>3</sup> I use the telic/atelic distinction to distinguish between the successive and the subinterval meaning of *dokud*. Let’s repeat: the successive *dokud* appears in telic environments, the subinterval in the atelic ones. Even if telicity/atelicity is in most cases coded by the grammatical aspect on Czech verb, it’s easy to show that we are really dealing with the lexical aspect here, not the grammatical distinction between perfectivity and imperfectivity. Consider a sentence like (i) with the perfective verb *vydržel* ‘endured’ which is atelic though. The meaning of the sentence (i) is the subinterval: Mary’s singing is subinterval of the time span of Karel’s enduring under water. The reason is the atelicity of the verb – *vydržet* ‘to endure’ is atelic even if perfective, as (ii) with the durative adverbial *celou hodinu* ‘for a whole hour’ witness. Thanks again to an anonymous reviewer for suggesting me the importance of this point.

- (i) Marie zpívala, dokud Karel vydržel pod vodou.  
 Marie singed<sub>IMPERF</sub> DOKUD Karel endured<sub>PERF</sub> under water  
 ‘Marie was singing while Karel endured under water.’
- (ii) Karel vydržel pod vodou celou hodinu.  
 Karel endure under water whole hour  
 ‘Karel endured under water for a whole hour.’

strict negative concord languages (for a recent linguistic treatment of this phenomena see e.g. Zeijlstra 2004), so any negative indefinite requires its main verb to be negated, otherwise the ungrammaticality obtains. Czech is a fine example of this Slavic pattern, as you can see in (9): (9-a) containing three negative indefinites is grammatical because its main verb is negated. Nevertheless (9-b) with non-negated main verb is ungrammatical. Surprisingly, negative concord is disrupted in sentences with *dokud* and telic embedded verb, as witnessed in (10-c). (10-a) and (10-b) show that the decisive factor for ungrammaticality of (10-c) is really the negative concord – (10-a) with the proper name *Karel* and (10-b) with the indefinite *někdo* are grammatical. (10-c) is ungrammatical, even if the whole embedded sentence *Nikdo neumřel* would be perfectly acceptable if it stood alone. But the pattern is even more interesting because the ungrammaticality of negative concord with *dokud* obtains only if the embedded sentence is telic, as in (10-c), whereas an atelic sentence as in (11) leads to full acceptability of *dokud* + negative concord. A tentative empirical hypothesis concerning negative concord and *dokud* is in (12).<sup>4</sup>

- (9) a. Nikdo nikoho nikde neviděl.  
 Nobody nobody<sub>ACC</sub> nowhere saw<sub>NEG</sub>  
 ‘Nobody saw anybody anywhere.’  
 b. \*Nikdo nikoho nikde viděl.  
 Nobody nobody<sub>ACC</sub> nowhere saw  
 ‘Nobody saw anybody anywhere.’
- (10) a. Petr čekal, dokud Karel neumřel.  
 Petr waited.<sub>IMPERF</sub> DOKUD Karel died<sub>PERFNEG</sub>  
 ‘Petr waited until Karel died’  
 b. Petr čekal, dokud někdo neumřel.  
 Petr waited.<sub>IMPERF</sub> DOKUD somebody died<sub>PERFNEG</sub>  
 ‘Petr waited until somebody died’

<sup>4</sup> An anonymous reviewer points out that English sentences like *Petr waited (to leave his hiding place) until he heard no voices* and *Peter waited until nobody had anything else to say* are perfectly grammatical for him. The direct translations of these sentences into Czech are distinctly odd: *\*Petr počkal (ve své skrýšti), dokud neuslyšel žádné hlasy* and *Petr počkal dokud nikdo nic neřekl*. The distinction between English and Czech seems to be the negative concord – English doesn’t need any negative licensing of n-words *no voices* and *nobody* but Czech sentences without negation on verb syntactically local enough for licensing to take place are ungrammatical. More about that in the section 3.3.

- c. \*Petr čekal, dokud nikdo neumřel.  
 Petr waited.<sub>IMPERF</sub> DOKUD nobody died<sub>PERFNEG</sub>  
 ‘Petr waited until nobody died’ \*NC+dokud+telic
- (11) Petr kouřil dýmku, dokud v hospodě nikdo nebyl.  
 Petr smoked.<sub>IMPERF</sub> pipe DOKUD in pub nobody was<sub>IMPERFNEG</sub>  
 ‘Petr was smoking a pipe while there wasn’t anybody in the pub’  
 √NC+dokud+atelic
- (12) If *dokud* appears in a telic sentence, it may combine only with expletive negation. However, if *dokud* appears in an atelic sentence, negative concord may take place.<sup>5</sup>

Let me comment shortly on (12), the further details are especially addressed in the section 3.3. I assume that negation in telic sentences like (10-c) is expletive in the following sense: the negation itself is regular negation with negative semantic interpretation (the usual connection  $\neg$  of classical logic) but because it has to move to the left periphery of sentence, it cannot license the n-words in the sentence. In this sense the negation is expletive only syntactically. The raising of negation in atelic sentences like (11) doesn’t happen, as the embedded sentence is atelic and doesn’t have to be homogenized by the negation.<sup>6</sup>

To summarize the current section, let’s recall the empirical generalizations we need to account for. First is a property 0 connecting *until* and *dokud* – both conjunctions are aspectually sensitive and there’s some interplay with negation concerning that. Second, even if both expressions are acting similarly w.r.t. aspect and negation, their semantics seems to be very different, property 1. And finally, if we look at negative concord and *dokud*, it seems that negation and aspect interacts again in an interesting way.

Property 0: both *dokud* and *until* basically atelic conjunctions sensitive to negation. Property 1: a meaning difference between *dokud* and *until*:

<sup>5</sup> I use the term expletive negation as a purely descriptive device for labeling sentences in which negation on verb doesn’t license negative concord (for the purposes of this paper we don’t need to resolve the debate about the nature of negation in so-called expletive negation sentences).

<sup>6</sup> Thanks to an anonymous reviewer for stressing the importance of the clarification with respect to my usage of the expletive negation notion already in this point.

subinterval vs. succession. Property 2: a syntactic observation: *dokud* allows negative concord only in atelic sentences

### 3. Proposal

Let's begin the theoretical part of my paper with a division of work. As was claimed in the previous section, there are two apparent semantics of *dokud*: subinterval and succession, illustrated in (13-a) and (13-b) respectively. The subinterval semantics occurs basically in atelic environments, the succession in the telic environments with negated verbs of both conjoined sentences.<sup>7</sup> The section 3.1 begins with the subinterval *dokud* and section 3.2 shows how the second meaning of *dokud* can be derived from its basic meaning.

- (13) a. Petr zpíval, dokud Marie hrála.  $\tau(\text{sing}') \subset \tau(\text{play}')$   
       Petr sang.<sub>IMPERF</sub> DOKUD Marie played<sub>IMPERF</sub>  
       ‘Petr was singing while Mary was playing’  
   b. Petr nedopsal tu knihu, dokud Marie neodjela do Londýna.  
       Petr wrote.<sub>PERFNEG</sub> the book DOKUD Marie left<sub>PERFNEG</sub> to London  
       ‘Peter hadn’t written the book until Mary left for London.’  
        $\tau(\text{leave}') < \tau(\text{write}')$

#### 3.1. Dokud in embedded atelic sentences

My main claim concerning Czech *dokud* is that there is only one *dokud* and its basic semantics is formalized in (14). The formalization is based on von Stechow (2002) and his discussion of various types of German *seit*. In core the lexical entry for *dokud* conjoins two predicates (P and Q), P and Q have their respective running times  $t$  and  $t'$ . The running time of Q (the embedded clause) is a superset of the running time of P (the main clause) and both events' end at some time denoted by a

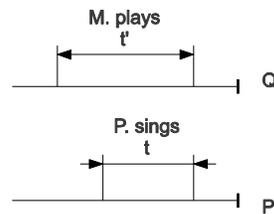
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<sup>7</sup> Let me stress already here that the succession semantics is reducible to the subinterval semantics plus the composition of the rest of the formula formalizing the telic environments. In that sense the fact that succession semantics occurs in telic environments and the subinterval semantics occurs only in atelic environments is just empirical observation without any explanatory value.

dummy variable (time  $t'$ ), this time  $t'$  is the right boundary (RB in (14)) of both events. The illustration of the meaning for (15) is the figure (16).<sup>8</sup>

$$(14) \quad \|\text{dokud}\| = \lambda Q \lambda P \exists t \exists t' \exists t'' [P(t) \wedge Q(t') \wedge \tau(P) \subseteq \tau(Q) \wedge \text{RB}(t, t'') \wedge \text{RB}(t', t'')], \text{ Q is homogeneous}$$

- (15) Petr zpíval, dokud Marie hrála.  
 Petr sang.<sub>IMPERF</sub> DOKUD Marie played<sub>IMPERF</sub>  
 'Petr was singing while Marie was playing'



- (16) Petr zpíval, dokud Marie hrála.  
 'Petr was singing, while Marie was playing.'

The claim that the time of a main clause denotes some subinterval of the embedded clause denotation can be illustrated by examples like (17), where the meaning is intuitively such, that in some part of his mother's life Petr had been living in his parents' house, but he moved out after his mother's death. If we look at *dokud* in terms of propositional logic, then the conjunction denotes a reversed implication (the main clause implicates the embedded clause). Normal implication goes in the opposite direction: the embedded clause implicates the main clause. So the sentence like (18-a) claims that there are three scenarios where the whole sentence is right: Peter is singing and Mary is playing, Peter isn't singing and Mary is playing, and finally: Peter isn't singing and Mary

<sup>8</sup> I gloss in my examples the durative *dokud* with English *while* but both conjunctions, even if they share the subinterval core meaning, differ as to their right boundary meaning. As an anonymous reviewer correctly points out, English *while* is open-ended with respect to its time span, which is not the case of Czech *dokud*. (15) for instance denotes such inclusions of events, where both must end at the same time point. This is the reason why I use RB (right boundary) in the formalization (14).

isn't playing. (18-b) on the other hand claims that there are three possible scenarios for the whole sentence to be true: Peter is singing and Mary is playing, Peter is singing and Mary isn't playing and finally: Peter isn't singing and Mary isn't playing. The truth conditions for *dokud* are summarized in the table (19).

- (17) Petr žil v domě svých rodičů, dokud byla jeho matka naživu.  
 Petr lived.<sub>IMPERF</sub> in house his parents DOKUD was his mother alive  
 'Petr was living in his parents house while his mother was alive'

- (18) a. If Peter was singing, then Mary was playing.  $p \supset q$   
 b. Dokud Petr zpíval, Marie hrála.  $q \supset p$

(19)

p	q	<i>dokud</i>	<i>if</i>
1	1	1	1
1	0	1	0
0	1	0	1
0	0	1	1

The main conclusion of this section is demonstrated on the example (20-a): its propositional meaning is simply the implication going from the main clause to the embedded clause – (20-c). The more detailed meaning following from the lexical entry for *dokud* is in (20-b). (20-b) can be read as: there is an event of Petr's sleeping and an event of Mary's singing, both happening at times  $t$  and  $t'$  respectively,  $t$  is a subinterval of  $t'$  and both events end at the some point  $t''$ , the right boundary of both events.

- (20) a. Petr spal, dokud Marie zpívala.  
 Petr slept.<sub>IMPERF</sub> DOKUD Marie sang.<sub>IMPERF</sub>  
 'Petr was sleeping while Marie was singing'  
 $\exists t \exists t' \exists t'' [\text{sleep}'(\text{Petr}', t) \wedge \text{sing}'(\text{Marie}', t') \wedge$   
 b.  $\tau(\text{sleep}') \subseteq \tau(\text{sing}') \wedge \text{RB}(t, t'') \wedge \text{RB}(t', t'')]$  sing' is  
 homogeneous  
 c.  $\text{sleep}' \supset \text{sing}'$

The lexical entry for *dokud* constraints the predicate of the embedded clause to homogeneous predicates, this codes the atelicity constraint observed with *dokud*. I assume, following at least Dowty 1979 a.o., that homogeneity is the way how to formalize the atelicity of verbal predicates. P is homogeneous if it has the subinterval property:  $P(t): \forall t [t' \subset t \rightarrow P(t')]$ , so e.g. the predicate *zpívat* from (20-a) is atelic because it is homogeneous – if it is true that Petr was singing from 14:00 to 15:00, then it is true that he was singing in every subinterval of the interval. The verb *dohrát* (‘finish playing’) from (21-b) is telic on the other hand, because it is not true that any subinterval of time where the predicate holds, has the subinterval property. The only interval where the predicate holds is the maximal interval – from the beginning of the event till its end. *Dokud* is sensitive only w.r.t. to the telicity of the embedded clause, as witnessed by (21-b), where the telicity of the main clause doesn’t cause any ungrammaticality.

- (21) a. \*Petr zpíval, dokud Marie dohrála.  
       Petr sang.<sub>IMPERF</sub> DOKUD Marie sang.<sub>PERF</sub>  
       ‘Petr was singing while Mary finished playing’  
       b. Petr napsal tu knihu, dokud byl Karel děkanem.  
       Petr wrote.<sub>PERF</sub> the book DOKUD was Karel dean  
       ‘Peter wrote the book while Karel was a dean’

### 3.2. Dokud in embedded telic sentences

The second meaning of *dokud*, the consecutive one, intuitively denotes succession of two events as in (22-b). (22-b) can be paraphrased as: if Honza kills the dragon, then the princess will marry him, but not sooner. This reading isn’t at the first sight derivable from the lexical entry of *dokud* in (14). The whole purpose of the present section is to show that in fact (14) plus negation plus aspect delivers exactly the consecutive meaning we need for (22).<sup>9</sup> For English *until* the same meaning appears when *until* occurs in a sentence without negation in the embedded clause. The distinction between *until* and *dokud* is that the consecutive meaning is possible for *dokud* only if it occurs with two negated telic predicates, while *until* can have this meaning if it occurs in a non-negated embedded

<sup>9</sup> Thanks again to an anonymous reviewer for alerting me about the need to explain my argumentation already here before the diligent reader get lost.

sentence as in (22-a). The distinction is probably a reflex of the different derivational make-up of both items: while *dokud* is composed from directional preposition and wh-element, *until* (at least diachronically) contains negation and conjunction.

(22) a. The EC will not lift its sanctions until that country makes political changes.

b. Princezna si Honzu nevezme, dokud Honza nezabije draka.

Princess REFL Honza.ACC marry.PERF.NEG DOKUD Honza kill.PERF.NEG dragon.ACC

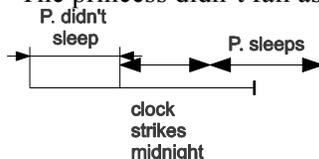
‘The princess will not marry Honza until he kills the dragon’

The consecutive meaning for Czech sentence like (23) can be depicted as in (24): the event of the embedded clause precedes the event of the main clause – to understand the sentence fully, we must intuitively de-negate the predicates.

(23) Princezna neusnula, dokud neodbila půlnoc.

Princess slept.PERF.NEG DOKUD stroke.PERF.NEG midnight

‘The princess didn’t fall asleep until the clock stroke midnight’



(24)

If we want to stick to the assumption that there is only one *dokud*, then the lexical entry in (14) should deliver the right truth conditions in any context. Let’s apply the lexical entry to the example (25-a). What we obtain is (25-b). Its core meaning says that the negation of the event of the princess’ marrying Honza is a subinterval of the negation of the event of Honza’s killing the dragon. In other words, when the proposition ‘Honza killed the dragon’ starts to be true, then it would be possible for the proposition ‘Princess marries Honza’ to be true as well. So my hypothesis is that the lexical entry in (14) delivers the truth conditions right, but it’s a bit hard to comprehend them. More on this bellow, but

let's note for now that the semantics of *dokud* predicts well that the negated telic predicate is grammatical with *dokud*, while the un-negated telic predicate isn't – see (26). This is so because a negation of an accomplishment like *kill* has the subinterval property, although the accomplishment pure doesn't have the subinterval property at all. This is so, because negation reverses the entailments: the trade mark of downward entailing (DE) contexts is the reasoning from sets to subsets – see the distinction between (27-a) and (27-b). The same holds for time intervals also: telic predicates in DE contexts are homogeneous and there's no need for stativizing theory of negation (stativizing theory of negation would claim that negation coerces achievements and accomplishments into states and being states would be the reason for the homogeneity of the negated events).

(25) a. Princezna si Honzu nevzala, dokud nezabil draka.

'The princess hadn't married Honza until he killed the dragon.'

$\exists t \exists t' [\neg \text{marry}'(\text{princess}', \text{Honza}', t) \wedge \neg \text{kill}'(\text{Honza}', \text{dragon}', t')$

b.  $\wedge \tau(\neg \text{marry}') \subseteq \tau(\neg \text{kill}') \wedge \text{RB}(t, t') \wedge \text{RB}(t', t'')$

$\neg \text{kill}'$  is homogeneous

(26) \*Princezna si Honzu vzala, dokud zabil draka.

(27) a. John reads a book.  $\neg \rightarrow$  John reads a novel.

b. John doesn't read a book.  $\rightarrow$  John doesn't read a novel.

As I implied in the previous paragraph, I consider the lexical entry (14) sufficient to describe truth conditions of *dokud* in any context. Another problem is whether it is natural for native speakers to process such meanings. As clear from the previous paragraph, the implication of two negated sentences is quite hard to comprehend, so I assume that hearers use the inferential rule of transposition of implication as stated in (28-a). The transposition of implication belongs to the tautologies of propositional logic and when applied to natural language, it claims the equality of an implication with the reversed negation of its antecedent and consequent. Schematically the sentence like (25-a) is then interpreted as: the right part of the equation in (28-b): instead of implication of two negations, the sentence is interpreted as an implication going from the embedded clause to the main clause. In that respect negation reverses the implication of *dokud* (recall that *dokud* in non-negated contexts implies

from the main clause to the embedded clause), so it behaves in this respect as ordinary *if*. From that follows why *dokud* with two negated telic sentences has the ‘consecutive’ meaning. The transposition of implication aligns the events such, that the event of the main clause is a necessary condition for the event of the embedded one.

- (28) a.  $(\neg Q \supset \neg P) \Leftrightarrow (P \supset Q)$   
 b.  $\neg\text{marry}' \supset \neg\text{kill}' \Leftrightarrow \text{kill}' \supset \text{marry}'$

### 3.3 Negative concord

In the previous section I have shown how to explain the property 0 and property 1 from the section *Puzzle*, now I will deal with the last property: the lack of negative concord in *dokud* headed telic sentences. As we saw, there is a correlation between the scope of negation and telicity of the embedded sentence – in telic sentences the negation cannot license negative concord. I assume that this follows because negative concord is a syntactic process which is constrained by locality conditions, and consequently the negation in telic sentences must be in a position inaccessible to negative concord. In this respect I follow Abels (2005), who claims that when negation (in Russian and also other Slavic languages) raises to CP, it cannot license negative concord anymore. Czech sentence demonstrating this hypothesis is (29) – the semantics of the verb *bát se* (‘be afraid’) conjoined with the subjunctive mood forces the negation of the embedded predicate to syntactically scope above its usual position and because the negation ends in the CP periphery, it cannot license negative concord.

- (29) Petr se   bál,           aby   \*nikdo/Karel nepřišel.  
 Petr REFL was\_ afraid COMP nobody/Karel come.<sub>PERF.NEG</sub>  
 ‘Petr was afraid of somebody/Karel coming.’

Let’s assume, that the lack of negative concord in the embedded telic sentences with *dokud* is caused by the same process: negation taking scope too high for the negative concord to take place. On the other hand, it’s not true that the negation has scope over the conjunction itself:  $\neg(p \supset q)$  in sentences like (30) ) it would be true only in a situation

where the princess would marry Honza, even though he hasn't killed the dragon. In any other situation it would be false – a fatally incorrect prediction – see (30-a) and (30-b) for the respective logical formulas. So the negation in telic sentences must be located somewhere under *dokud*, but higher than in atelic sentences. I assume that the negative concord is disrupted in the same way as in (31-a), where the negation (*ni-*) is incorporated into the conjunction (*a*) – compare (31-b);

(30) Princezna si Honzu nevzala, dokud nezabil draka. (=25-a)

a.  $\neg p \supset \neg q \Leftrightarrow q \supset p$       b.  $*\neg(p \supset q)$

(31) a. \*Petr odešel, a-ni-ž nikdo přišel.

Petr left ANIŽ nobody come.<sub>PERF</sub>  
 'Petr left while nobody came.'

b. Petr odešel, a-ni-ž Karel přišel.

Petr left ANIŽ Karel come.<sub>PERF</sub>  
 'Petr left while Karel didn't come.'

If we assume that scope of negation in embedded telic clauses headed by *dokud* is too high to license negative concord, the natural question to ask is why it should be so. Even if we follow von Stechow (2009) in his assumption, that negation usually takes wide scope with respect to the time of the sentence (e.g. *John didn't sleep today* is true when negation outscopes past time, otherwise the truth conditions for this sentence would be too weak), it still doesn't follow why telic and atelic sentences should behave differently with respect to the scope of negation. I think that the most probable explanation follows from the homogeneity restriction of *dokud*. As *dokud* requires the embedded clause to be homogeneous, the negation must scope higher than any other element in the clause (recall that telicity of the sentence is a compositional phenomenon, all arguments of verb and of course the verb itself are composed in the computation of telicity – see Krifka 1989 a.o.), otherwise the sentence would be semantically anomalous.

(32) a. \*Karel čekal, dokud nikdo neumřel.

Karel waited.<sub>IMPERF</sub> DOKUD nobody died<sub>PERFNEG</sub>  
 'Karel waited until nobody died'      \*NC+dokud+telic

- b.Karel kouřil dýmku, dokud v hospodě nikdo  
nebyl.  
√NC+dokud+atelic  
Karel smoked.<sub>IMPERF</sub> pipe DOKUD in pub nobody  
was<sub>IMPERFNEG</sub>  
'Karel was smoking a pipe while there was nobody in the pub.'

#### 1.4.1. Positive polarity items

We can detect the same pattern as with the negative concord with positive polarity items. As we saw in the previous section, negation in telic sentences has higher scope than in atelic sentences. So high that even positive polarity items like *někdo* can have narrow scope w.r.t. negation. Look at (33) with the usual behavior of PPI: sentence (33) can only have only the logical form in (33-a), the logical form (33-b) is ungrammatical for the sentence, because the negation would scope over the existential quantifier representing the semantic contribution of the PPI *někdo*. (34) with the same PPI *někdo* on the other hand allow the scope of negation wider than the PPI: the sentence is interpreted as: the event of Peter's smoking the pipe was a subinterval of the time, during which when nobody entered the pub. The interpretation makes it clear that the PPI is interpreted as non-specific indefinite in the scope of negation. It doesn't require any specific individual to be the one who stops Peter's smoking the pipe: (34) is true, if Petr stops smoking his pipe when anyone enters the pub.

- (33) Někdo nepřišel.  
'Somebody didn't come'  
a.  $\exists x[\text{person}'(x) \wedge \neg \text{came}'(x)]$  b.\*  $\neg \exists x[\text{person}'(x) \wedge \text{came}'(x)]$
- (34) Petr kouřil dýmku, dokud do hospody někdo nevstoupil.  
Petr smoked.<sub>IMPERF</sub> pipe DOKUD into pub somebody  
entered<sub>PERFNEG</sub>  
'Petr was smoking a pipe until somebody entered the pub'  
nonspecific: Petr was smoking a pipe  $\neg \exists x[\text{person}'(x) \wedge \text{enter}'(x)]$

#### 4. Conclusion

I argued for the unified semantics of the Czech conjunction *dokud*: in particular, *dokud* is a reversed implication – the main clause implicates the embedded clause. There's another layer of complexity above its implicational core – the embedded sentence headed by *dokud* must be homogeneous and the main sentence's running time is a subinterval of the running time of the embedded sentence. There are two kinds of interpretation of *dokud* – 'durative' and 'eventive', but both have the same subinterval semantic core: 'durative' *dokud* occurs with atelic sentences, its semantics is subinterval. 'eventive' *dokud* occurs with telic sentences, its semantics is at first sight consecutive, but the consecutive interpretation follows from the interaction of negation with the core subinterval semantics of *dokud*. Verbal negation in telic embedded sentences headed by *dokud* has wider scope than in atelic sentences, because it must shift the telic sentence to homogeneous interpretation. And as the negation combining with 'eventive' *dokud* has wider scope than usually, it cannot license negative indefinites in the clause. In contrast, positive polarity items can occur with 'eventive' *dokud* without having a wide scope interpretation.

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## **Negative Concord Items in Fragment Answers: Not So Negative After All\***

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The study of negative concord has a long history. The crucial question has been whether negative concord items (henceforth, *n-words*) contribute negative meaning on their own. The majority of researchers hold one of the following two positions: (i) *n-words* contribute negative meaning or (ii) *n-words* are ambiguous between a negative and a non-negative interpretation.

In this paper, I will examine one argument in favor of the position that *n-words* can contribute negative meaning on their own: their ability to appear in negative fragment answers to information-seeking *wh*-questions. I propose that negative fragment answers differ from the other answers to *wh*-questions in that they negate the presupposition of the question instead of making choices from the set of possible answers. This view supports the conclusion that *n-words* in negative fragment answers are remnants of elliptical clauses, where the elided constituent contains sentential negation. Thus, negative fragment answers do not force the conclusion that *n-words* can contribute negative meaning.

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The paper is organized as follows. In Section 1, I provide a general discussion of negative concord in Russian and crosslinguistically. Section 2 discusses the ellipsis approach to n-words in fragment answers and the problems this approach faces. In Section 3, I offer a new explanation of where the negative meaning of n-words in fragment answers comes from and show how this proposal handles the problems of the ellipsis approach discussed in Section 2. The final Section concludes the paper.

### 1. Negative concord in Russian (and crosslinguistically)

Negative concord (NC) has been studied extensively for a wide variety of languages (Jespersen 1917, Labov 1972, den Besten 1986, Haegeman and Zanuttini 1991, 1996, Laka 1990, Giannakidou 2000, 2002, Watanabe 2004, Progovac 2005a, b, Zeijlstra 2004, among many others). The lexicon of a NC language includes negative elements and n-words (negative concord items/ NCIs), which depend on sentential negation (SN). In the Russian (1a,c) the italicized items are n-words. Observe that in contrast to the Standard English (1b) the Russian (1a) does not have a double negation (DN) interpretation, which supports the conclusion that the n-word does not contribute negative meaning. To achieve a DN interpretation in Russian, the negative non-n-word NP *nepravda* ('not-truth') is added in (1c).

- (1) a. Ivan *ničego* \*(**ne**) znaet. NC (Russian)  
 Ivan n-what NEG knows  
 'Ivan does not know anything.'  
 b. You don't know nothing. DN (Standard English)  
 c. **Nepravda**, čto Ivan **ne** znaet *ničego*.  
 not-truth that Ivan NEG knows n-what  
 'It is not the case that Ivan knows nothing.'  
 (i.e., Ivan knows something.)

(2a) shows that SN does not require licensing. (2b,c) and (1a) show that n-words require the presence of sentential negation regardless of whether they are pre- or post-verbal, and of whether they are arguments or adjuncts.



(3b) has received many explanations, which have different consequences for the analysis of structures other than fragment answers, such as (1a,c) and (2a-c). On the negativity or ambiguity approach (Zanuttini 1991, Herburger 2001, Bošković 2009), as well as one the self-licensing approach along the lines of Zeijlstra (2004), (3)3b) itself ceases to be a problem, but instead (1a,c) and (2a-c) require extra effort because in these cases the negativity or self-licensing of n-words is not desirable. On the ellipsis approach of Giannakidou (1998) and subsequent work, the n-words are not negative and do not license themselves; instead, they are licensed by SN in the elided constituent. This approach appears to suffer from lack of generality, faces the problem of recoverability of deletion (Watanabe 2004), and undergenerates DN readings of fragment answers given to a negated wh-question (Bošković 2009). I will show that these problems are only apparent and that the ellipsis approach holds water and leads to a simpler grammar.

## 2. The Ellipsis Approach to N-words in Fragment Answers and its Problems

In the characterization of the ellipsis approach to fragment answers, I adopt Brown's (1999) checking theory-based approach to Russian negative constituents and Bošković's (2009) conclusion that n-words undergo focus movement. Based on Chomsky (1992, 1994, 1995), Brown proposes that the SN morpheme *ne* carries an interpretable negative feature  $iF_{NEG}$  and heads the NegP projection. N-words carry uninterpretable negative features  $uF_{NEG}$ ; n-words themselves cannot contribute negative meaning. They raise to Spec, NegP to check their  $uF_{NEG}$  against the  $iF_{NEG}$  of *ne* (4).

- (4) a. Ja nikogo ne znaju (?!??*nikogo*)  
 I n-who neg know  
 'I do not know anybody.'  
 b. [<sub>NegP</sub> nikogo [<sub>Neg'</sub> ne ... ]]  
 $uF_{NEG}$   $iF_{NEG}$

Consider how (3b) is derived. The pre-ellipsis structure corresponds to the order in (5a), derived as in (5b,c). (5d) shows the result of the ellipsis.

- (5) a. Nikogo ja ne videl.  
 n-who I NEG saw  
 ‘I did not see anybody.’
- b. Ja [<sub>NegP</sub> nikogo<sub>i</sub> ne videl t<sub>i</sub>] checking off the uninterpretable  
~~uF<sub>NEG</sub>~~ iF<sub>NEG</sub> NEG feature
- c. [<sub>FocP</sub> nikogo<sub>i</sub> [<sub>AgrsP</sub> ja [<sub>NegP</sub> t<sub>i</sub> ne videl t<sub>i</sub>]]] focus movement of the  
 n-word
- d. [<sub>FocP</sub> nikogo<sub>i</sub> [<sub>AgrsP</sub> ja [<sub>NegP</sub> t<sub>i</sub> ne videl t<sub>i</sub>]]] ellipsis

Bošković (2009) argues that the ellipsis analysis as presented in 0 does not work. His counterarguments are the following. First, based on Watanabe (2004), the ellipsis analysis overgenerates. If a non-negative sentence can serve as an ellipsis antecedent for a negative sentence, we should expect it to be a general phenomenon, but it is restricted to n-words. In (6b), the fragment answer *Zmiju* is predicted by the ellipsis analysis to be ambiguous between (6c) and (6d), where (6c) is in fact the only possible interpretation.

- (6) a. Šta si vidio? Serbo-Croatian (Bošković 2009)  
 ‘What did you see?’
- b. *Zmiju* ‘Snake.’
- c. *Zmiju sam vidio.* d. \**Zmiju nisam vidio.*  
 ‘snake am seen’ ‘snake neg.am seen’

Second, Bošković observes that negative fragment answers to negated wh-questions in Serbo-Croatian (SC) are ungrammatical, so ellipsis must be in fact disallowed by the grammar. Furthermore, the grammatical non-elliptical answer has only the DN meaning (7). One negative meaning comes from the SN, the only source for the other negation seems to be the n-word.

- (7) *Situation*: There was a party yesterday. A knows that John, Mary, and Jane were at the party, but does not know whether Bill, Joan, and Peter were there:

A: Ko nije došao?  
 who neg.is come  
 ‘Who didn’t come?’



alternatives introduced by the wh-word (see Beck (2006) and references cited there for discussion). The proposition that is the answer is a member of this set. The question also carries the presupposition obtained by existential binding of the variable that corresponds to the wh-word; for example, the question in (9) presupposes that B bought something (Levinson 1983):

- (9) A: What did you buy?  
 B: {that I bought bread, that I bought cookies, that I bought cat food, etc.}

The core of my proposal is that the proposition ‘I bought nothing’ is not a member of this set, contrary to the assumption in Giannakidou (2006) and references cited there. Rather, when the speaker gives a negative fragment answer, he is not answering the original wh-question. If he did, he would contradict himself. To see what is going on, consider the dialog below.

- (10) A: Where did you buy your new car?  
 B: Agreeing with the presupposition: {that I bought my new car in Colchester, that I bought my new car in Willimantic, that I bought my new car in Norwich}  
 - I bought it in Colchester  
 Rejecting the presupposition:  
 - I did not buy a car (someone else did).

If we keep the proposition constant but for the focus-induced alternatives, it would clearly be contradictory to construe the answer set as {that I bought my new car in Colchester, that I bought my new car in Willimantic, that I bought my new car in Norwich, that I did not buy a car}, with the alternative that rejects the presupposition included. Instead, if B says *I did not buy a car* he is not answering the original wh-question. I propose that the same process happens in (3b), (8A’) and negative fragment answers generally: negative fragment answers are not answers to the wh-question. Rather, they inform the inquirer that his

question has no answer because the presupposition does not hold.<sup>1</sup> Importantly, this means that the question cannot be construed as the antecedent of ellipsis in these cases. The antecedent of ellipsis is recovered from the situation.<sup>2</sup>

Consider how this approach solves the problems that the ellipsis approach faces. Starting with DN readings in (7) and (8), we can see that they result from the fact that the presupposition being negated is itself negative. (11) and (12) illustrate.

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<sup>1</sup> If negative fragment answers indeed involve denying the presupposition of the question, they provide evidence for the hypothesis in Simons, Tonhauser, Beaver and Roberts (2010) that what projects is necessarily not at-issue information. The presupposition of the question is not at-issue for the ‘questioner’, hence projects, but is at-issue for the answerer, hence used in the scope of negation and does not project (negative fragment answers do not feel infelicitous).

<sup>2</sup> An anonymous FASL reviewer points out the following example of a question - negative fragment answer pair that can be analyzed as TP ellipsis licensed by identity with the TP in the question:

(i) A forgetful teacher asks the class the question in A and gets the answer in B:

A: U kogo [net ocenki v dnevnike]?	B: Ni u kogo.
By who not.be grade in gradebook	n by who
‘Who has no grade in (their) gradebook?’	‘Nobody.’
	NC: No one has a grade.
	*DN: Everyone has a grade.

The reviewer connects the unavailability of the DN interpretation of (iB) to the observation that (ii) is ungrammatical:

(ii) \*Ni u kogo ne [net ocenki v dnevnike].  
n by who NEG not.be grade in gradebook

I cannot agree that (i) is an argument in favor of negative fragment answers having a linguistic antecedent because (i) is an exception rather than the rule for the reason that the reviewer also points out: (iii), without *net* (glossed as ‘not.be’), has the DN interpretation:

(iii) A: U kogo ne stoit ocenki v dnevnike?	B: Ni u kogo.
By who NEG stands grade in gradebook	n by who
‘Who has no grade in (their) gradebook?’	‘Nobody.’
	DN: Everyone has a grade.

There appears to be a difference in the communicative intent of the fragment answers in (i) and (iii). In contrast to (iii), the negative fragment answer in (i) does not point out that the presupposition that someone has no grade does not hold; rather, it points out that not just someone but in fact every student in the class has no grade. I thank the reviewer for drawing my attention to this fact. I speculate that the exceptional status of (i) may be related to the nature of *net*, but this question goes beyond the topic of this paper and I leave it for further research.

- (11) The speaker agrees with the presupposition that there was an event of people not coming, so the alternative with the n-word is not the set:

{that John did not come, that Mary did not come, that Jane did not come, that Bill did not come, etc.}

- (12) The speaker disagrees with the presupposition that there was an event of people not coming, the proposition containing the n-word and negation that negates the presupposition of the question is the only choice the speaker has. Hence, the elided constituent in the Russian (8b) is as in (12)2a), and the SC (7(7)B') contains two negative heads, only one of which is visible on the surface (12(12)c).<sup>3</sup>

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<sup>3</sup> The reader will notice an asymmetry between Russian and SC in what answer is possible to a negated wh-question. In SC, the elliptical answer is unacceptable, and the non-elliptical answer with the DN interpretation is the only available option, as indicated in the body of the text. In contrast, in Russian only the elliptical answer is acceptable. The non-elliptical answer (i) cannot be an answer to a negated wh-question (8A) in the body of the text. It can only be used as an answer to (ii) and have the NC interpretation.

- (i) #Nikto ne prišël.  
nobody NEG come  
NC: Nobody came.  
\*DN: Someone came.
- (ii) Kto prišël?  
Who came  
'Who came?'

This contrast is accompanied by a contrast in the prosodic characteristics of the answer: the Russian (12b) is pronounced with a neutral intonation, whereas the SC (12c) is characterized by a very strong stress on *Niko*.

It appears that in both languages, ellipsis is required in negative answers to negated wh-question, possibly to repair a PF violation similar to the ban on adjacent homophonous wh-phrases in multiple wh-fronting languages (Bošković 2002). The size of the constituent this ellipsis affects is, however, different – whereas in SC only one of the two negative elements elides and the stress on the n-word signals to the hearer its presence in the ellipsis site, in Russian the whole AgrSP has to go. By itself, these considerations do not explain the unacceptable status of the elliptical (7B). I leave the

- a. nikto ne (ne prišël)                    Russian  
 n-who NEG NEG came
- b. Nikto ~~ne-ne~~ prišël.  
 Nobody. (i.e. everyone came.)
- c. Niko ~~ne~~ ne je došao.            SC  
 n-who NEG NEG AUX come

It is easy to see how the Recoverability of Deletion is satisfied, the more interesting question is why SN elides at all. Speakers of NC languages know that n-words are not negative but signal the presence of SN in the structure, so they reconstruct it in the elided constituent based on the preceding linguistic context and the presence of the n-word. This also explains why the answer *Snake* in (6b) cannot mean ‘I did not see a snake’. The word *snake* does not have uninterpretable negative features to check against SN and thus cannot signal to the hearer its presence in the elided constituent. On the other hand, the inclusion of SN in the ellipsis site is motivated by PF well-formedness. SN is a proclitic on the verb in both Russian and Serbo-Croatian, which means that stranding SN under VP deletion will cause the derivation to crash at PF.

### Conclusion

I examined one argument in favor of the position that n-words can contribute negative meaning on their own: their ability to appear in negative fragment answers to information-seeking wh-questions. I proposed that negative fragment answers differ from the other answers to wh-questions in that they negate the presupposition of the question instead of making choices from the set of possible answers. This view supports the ellipsis analysis of negative fragment answers where the elided constituent contains sentential negation and the n-word itself does not contribute negative meaning. Thus, the acceptability of n-words in negative fragment answers does not force the conclusion that n-words can contribute negative meaning.

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precise explanation of this intriguing contrast between Russian and SC for further research.

The main benefit of this view is a simpler grammar compared to the other two approaches: the negativity approach and the ambiguity approach. Taking n-words to be semantically negative complicates grammar because extra mechanisms are required to cancel their negative meaning in the cases where sentential negation is present. The view that n-words are ambiguous between negative and non-negative interpretation (or that sentential negation is ambiguous between the negative and non-negative interpretation) both inflates the lexicon and requires extra operations to choose the correct lexical item in each case. The non-negativity view that I defend suffers from neither of these drawbacks because it employs only independently motivated mechanisms.

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## **Clitics Doubling and the Featural Specification of Macedonian DPs\***

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This paper focuses on clitic doubling (CD) of left-peripheral and clause internal direct objects in Macedonian.<sup>1</sup> In this context, I argue that CD in Macedonian is regulated in a systematic way in that the clitic licenses a [+strong] feature on the DP it doubles (following Sportiche 1998), where strength is a correlate of the semantic properties of the DPs (as defined in Barwise & Cooper 1981). The proposal aims to explain the obligatory doubling of (semantically) strong DPs and the somewhat unusual patterning of (semantically) weak DPs with respect to clitics.

### **1 The Data**

It is well-known that cross-linguistically CD is expected with strong DPs (e.g. definites, universals). This is also true for Macedonian.

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<sup>1</sup> In this talk, I only consider the doubling of direct objects. I do not discuss subjects or indirect objects and their clitic requirements, which are different from that of direct objects (e.g. subjects are never CDed; indirect objects are obligatorily CDed). I hope that the insights offered here will be applicable to their analysis, but I leave the actual investigation of this for future research.

As we can see in (1a-c), strong DPs obligatorily require clitics. This requirement holds for post- and preverbal DPs within IP (cf. (1a) vs. (1b)) and for dislocated ones, as shown in (1c).

- (1) a. Ana *\*(gi)* pročita *site knigi / poveketo knigi / knigite*.  
 Ana them read all books/ most books/ books-the  
 ‘Ana read all the books/most books/the books.’
- b. Ana *site knigi / poveketo knigi / knigite* *\*(gi)* pročita.  
 Ana all books/ most books/ books-the them read  
 ‘Ana read all the books/most books/the books.’
- c. *Site knigi / poveketo knigi / knigite*, Ana *\*(gi)* pročita.  
 all books/ most books/ books-the Ana them read  
 ‘All the books/most books/the books, Ana read them.’

In the case of weak DPs an interesting pattern develops. Weak DPs that occur in post- and preverbal position within IP uniformly disallow clitics, as can be seen in (2a-b).

- (2) a. Ana *\*(gi)* pročita *dve/mnogu/malku/nekolku knigi*.  
 Ana them read two/many/few/several books  
 ‘Ana read two/many/few/several books.’
- b. Ana *dve/mnogu/malku/nekolku knigi* *\*(gi)* pročita.  
 Ana two/many/few/several books them read  
 ‘Ana read two/many/few/several books.’

Weak DPs in clause initial positions can be dislocated without a clitic, which given their patterning in (2a-b) is expected. However, a subset of weak DPs can also appear with clitics when dislocated. The two patterns are illustrated in (3a) and (3b), respectively.

- (3) a. *Mnogu/malku knigi*, Ana *\*(gi)* pročita.  
 many/few books Ana them read  
 ‘Many/few books, Ana read.’
- b. *Dve/nekolku knigi*, Ana *(gi)* pročita.  
 two/several books Ana them read  
 ‘Two/several books, Ana read (them).’

The question is what governs the distribution of the clitics in (1)-(3), i.e. how can we account for the co-occurrence patterns in the examples above. In the next section, I outline a proposal that accounts for the distribution of the clitics with IP-internal DPs and show that the presence of the clitic correlates to the feature specification of the DP. In section 2, I augment this proposal to accommodate the clitic resumption of left-dislocated DPs and offer a novel characterization of Macedonian DPs with respect to the proposed feature specification. Section 3 gives evidence for the featural specification of both strong and weak DPs in Macedonian. Section 4 contains the conclusion.

### *1.1 The Formal Representation of CD in Macedonian*

The data in (1) and (2) show a clear pattern in the distribution of clitics with strong and weak DPs: clitics are obligatory with strong ones and excluded with weak ones. I take this patterning as the starting point in the analysis.

To explain the CD of pre- and postverbal direct objects in (1a-b) and (2a-b), I propose that the distribution of the clitics is governed by the feature specification of the DPs, with the features being representative of their intrinsic semantic properties.<sup>2</sup> I take that the driving factor for the appearance of the clitic is the semantic strength of the DP itself (rather than their referentiality, specificity, focus/topic properties; see Kochovska 2010). The semantic strength of the DP (defined as in Barwise & Cooper 1981) is encoded as a [+strong] feature on the DP.

The encoding of the semantic strength/weakness of the DPs as a feature means that, structurally, CD configurations in Macedonian arise as a result of a feature checking operation (following Sportiche 1998).

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<sup>2</sup> This means that the relevant semantic factors are reflected in the syntax, as they are encoded within features that are checked in the syntax. As the reviewer points out, this kind of analysis is reflective of Bošković' (2008, 2010) well-established generalization concerning CD. Bošković shows that CD is only allowed in languages with articles. Given this, he argues, CD must crucially involve feature checking in the syntax. Assuming that CD ties in with definiteness/specificity effects, Bošković argues that these semantic notions are syntactically encoded differently in different languages and that CD configurations arise as a result of the different syntactic encoding rather than the different semantics of these languages. My account of CD in Macedonian is compatible with Bošković' in that I also hold CD to be a result of syntactic feature checking. The difference here is that the features checked correspond to the semantic strength/weakness of the doubled DP rather than its definiteness/specificity (see Kochovska 2010).

This means that the clitic licenses a [+strong] feature on the DP it doubles.

I assume with Sportiche (1998), Anagnostopoulou (1999) and others, that the DPs in doubling configurations are arguments of the verb and that the clitic itself is generated in its surface position. I also assume that clitics are heads of their own functional projections (CIPs), located in the IP domain, above VP (following Sportiche 1998; see also Kallulli 2008, etc.).<sup>3</sup> To account for the fact that clitics in Macedonian are proclitics and are phonologically dependent on the verb, I follow Rudin (1997) and assume that the verb raises to Cl and right-adjoins to it, forming a complex verb.

Given the above, the licensing of the [+strong] feature is carried out through a spec-head relation (Chomsky 1995), whereby the movement of the direct object DP to SpecCIP creates the necessary agreement relation.

The licensing of the features on the doubled DP is regulated by the Clitic Criterion (following Sportiche 1998):

(4) *Clitic Criterion* (Sportiche 1998:267)

- a. A clitic must be in a spec-head relationship with a [+F] XP at LF.
- b. A [+F] XP must be in a spec-head relationship with a clitic at LF.

This means that if a clitic is related to a particular DP, the DP must move to the specifier position of CIP in order to satisfy the Clitic Criterion.

The implementation of this proposal to Macedonian will mean the following. In all cases of CD, the direct object DP is generated in the argument position of the verb and then moves to SpecCIP.<sup>4</sup> The movement enables agreement through which the clitic licenses the [+strong] feature on the DP. In cases where the DP does not carry a [+strong] feature, feature-checking does not place. I assume that in such

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<sup>3</sup> This is similar to Kallulli (1999, 2008), Alexiadou & Anagnostopoulou (1997), Anagnostopoulou (1999) who also follow Sportiche in analyzing the clitic as the head of CIP. Kallulli argues that the clitic in Greek and Albanian licenses a [-focus] feature because focused elements cannot be CDed in these two languages. Alexiadou & Anagnostopoulou (1997) and Anagnostopoulou (1999) maintain that the clitic is as an agreement marker, following Suñer (1988).

<sup>4</sup> The data so far suggests that this movement of the DPs is covert.

cases principle of economy of representation regulate the presence of the CIP (following Rizzi 1997, and others). This means that the CIP would only be present when needed.

With this system in place let us now look at the derivation of the examples in (1a-b) and (2a-b). On the assumption that strong DPs are [+strong] and weak DPs are [-strong], the (non)occurrence of the clitic in these examples can be explained as follows.

The clitic (i.e. the CIP) will be generated when it needs to license a [+strong] feature. If a clitic is related to a particular DP, the DP has to move to SpecCIP (by LF), to satisfy the Clitic Criterion; see (5b).<sup>5</sup> At the same time, a [+strong] object DP without a clitic is ungrammatical because in this case the relevant feature of the DP cannot be checked, as a result of which, the derivation cannot converge; see (5c).

- (5) a. Ana    \*(*gi*)    pročita *poveketo*   *knigi*.  
           Ana        them read    most        books  
           ‘Ana read most of the books.’  
       b. [<sub>IP</sub> [<sub>DP</sub> Ana] [<sub>CLP</sub> *gi*<sub>i</sub> + *pročita*<sub>j</sub> [<sub>VP</sub> *t*<sub>j</sub> [<sub>DP</sub> *poveketo knigi*<sub>i</sub> ] ]]]  
       c. \*[[<sub>IP</sub> [<sub>DP</sub> Ana] [<sub>VP</sub> *pročita* [<sub>DP</sub> *poveketo knigi*<sub>i</sub> ]]]]]

In cases where the DP is not marked with a [+strong] feature, the feature-checking between the clitic and the DP cannot be established. Hence [-strong] DPs do not trigger its occurrence; see (6b). The CIP in such cases will not be projected, due to principles of economy (Rizzi 1997, etc.). Since in such cases the conditions for licensing between the clitic and the weak DP do not obtain, constructions containing a weak DP and a clitic would be ungrammatical; see (6c).

- (6) a. Ana    \*(*gi*)    pročita *mnogu/dve* *knigi*.  
           Ana        them read    many/two   books  
           ‘Ana read many/two books.’  
       b. [<sub>IP</sub> [<sub>DP</sub> Ana] [<sub>VP</sub> *pročita* [<sub>DP</sub> *mnogu/dve knigi*<sub>i</sub> ]]]]  
       c. \*[[<sub>IP</sub> [<sub>DP</sub> Ivan] [<sub>CLP</sub> *gi*<sub>i</sub> + *pročita*<sub>j</sub> [<sub>VP</sub> *t*<sub>j</sub> [<sub>DP</sub> *mnogu/dve*<sub>i</sub> ]]]]]]

The behavior of strong/weak DPs within IP suggests that a distinction between [+strong] vs. [-strong] feature specification is sufficient to

<sup>5</sup> The derivation in (5b) is that of a postverbal DP, but it holds for preverbal ones as well.

explain the clitic co-occurrence restrictions. This, however, is not the case as it explains only partially the distribution of the clitic with strong and weak DPs in the left periphery; see (1c) and (3a-b). In other words, while the [+strong] vs. [-strong] feature characterization correctly predicts the occurrence of the clitic with left-peripheral strong DPs in (1c) and its absence with left-dislocated weak DPs in (3a), it cannot explain the presence of the clitic with left-peripheral weak DPs in (3b). By treating the weak DPs uniformly, we predict that they should behave the same with respect to the Clitic Criterion even when left-dislocated, meaning that the clitic should always be absent with such DPs. This is clearly not the case, as can be seen in examples like (3b). This, in turn, suggests that an alternative and more nuanced characterization is needed.

## 2 A Three-Way Distinction in Feature Specification

To explain the divergent behavior of the left-peripheral and clause internal weak DPs in Macedonian with respect to clitics, I propose a three-way distinction in the feature specification of the DPs for strength.<sup>6</sup>

On this view, inherently strong DPs are marked as [+strong] whereas weak DPs split into two groups: those that are [-strong] and those that are unspecified for strength. The distinction between the two types of DPs correlates with their interpretation. In particular, [-strong] DPs are weak DPs that do not allow for specific interpretation, while unspecified for strength are weak DPs that allow for specific interpretation. Evidence for the correlation is offered in section 3.

In what follows we see that the divergent behavior of left-dislocated weak DPs with respect to clitics is driven by their different feature specification. It is important to note, however, that the three-way characterization of the DPs does not alter the analysis of CD for pre- and postverbal DPs offered above. The presence/absence of clitics with those DPs would still be subject to the Clitic Criterion. The clitic will only be generated with [+strong] DPs as these are the only DP that can license its presence. Clitics will not be generated with [-strong] and unspecified for strength weak DPs as their feature specification is not compatible.

We are now in a position to provide a more satisfactory explanation for the patterns of clitic co-occurrence with DPs at the left periphery.<sup>7</sup>

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<sup>6</sup> I am indebted to Veneeta Dayal for the idea of a three-way distinction of the weak DPs.

From the outset, I assume that, in principle, left-dislocated DPs in Macedonian can either be base-generated or derived by movement.<sup>8</sup> The first option entails that the dislocated element is generated in its surface position and enters into a binding relation with its coindexed clitic. I take such constructions to be instantiation of a binding chain and constructions derived by movement to be an instantiation of a government chain (following Cinque 1990). The idea is that the feature characterization of the dislocated DPs will turn out to play a determining role in the formation of the syntactic chains.

With these assumptions in place, let us consider the movement option first.<sup>9</sup> When direct objects move to clause-initial position, they leave a trace in the argument position within IP. Derivations for strong and weak DPs are given in (7a) and (7b), respectively.

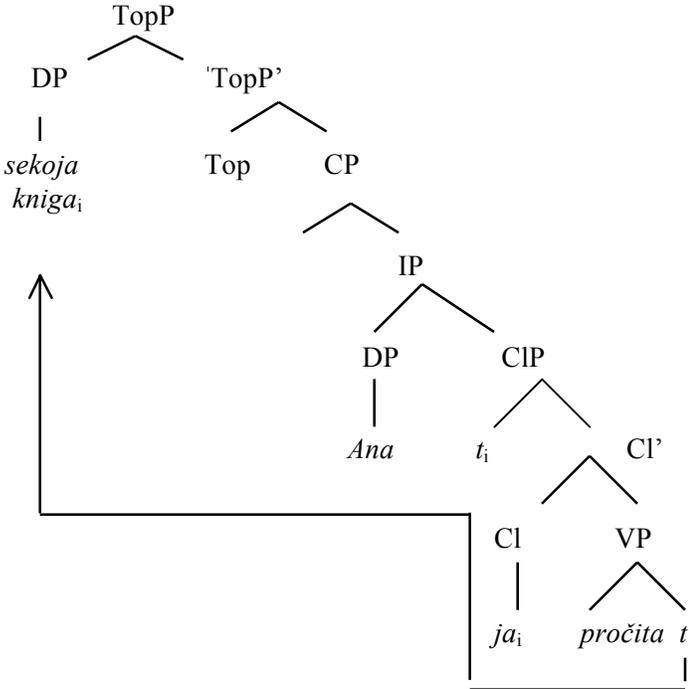
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<sup>7</sup> I should briefly note here that I assume CD to be distinct from left-dislocated constructions involving a clitic (i.e. CLLD) in Macedonian. One of the strongest arguments in support of this view is the fact that some languages have CLLD but not CD (see Anagnostopoulou 2006). Although Macedonian has both, I maintain that the two constructions are different because they have different properties, some of which are: i) CD is not possible with weak quantifiers but CLLD is (as in Greek; see Iatridou 1995), ii) CD is subject to WCO effects, while CLLD is not, iii) CD and CLLD have different scope properties, and iv) CLLD forces a specific reading of the CLLDed XP to the exclusion of a nonspecific reading, while CDed XPs allow for both (Kochovska 2010).

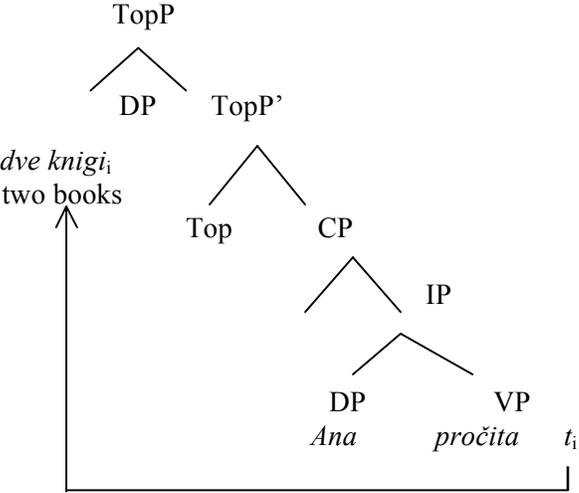
<sup>8</sup> Evidence from WCO and island tests show that DPs coindexed with clitics are in fact base-generated in their surface positions and DPs that do not co-occur with clitics move to the left periphery (Kochovska 2010).

<sup>9</sup> I also assume following Rizzi (1997) that dislocated DPs in Macedonian occupy a TopP position in the CP field.

(7)a.

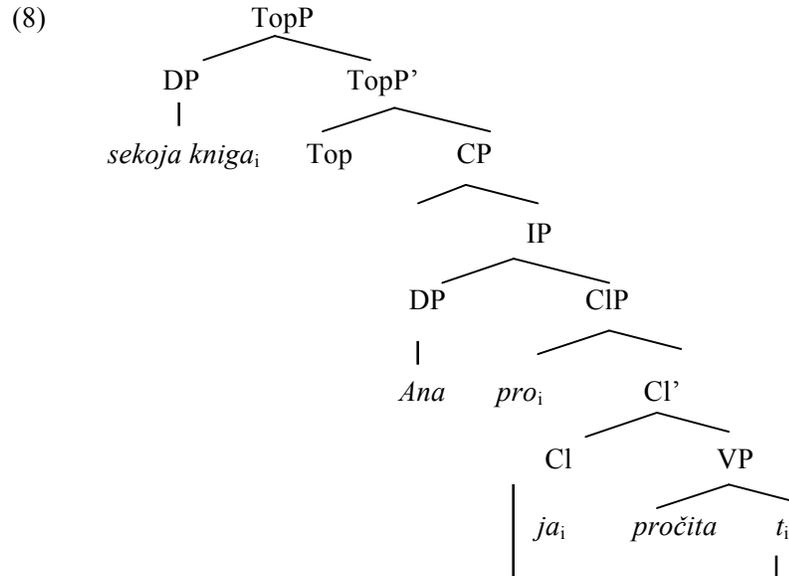


b.

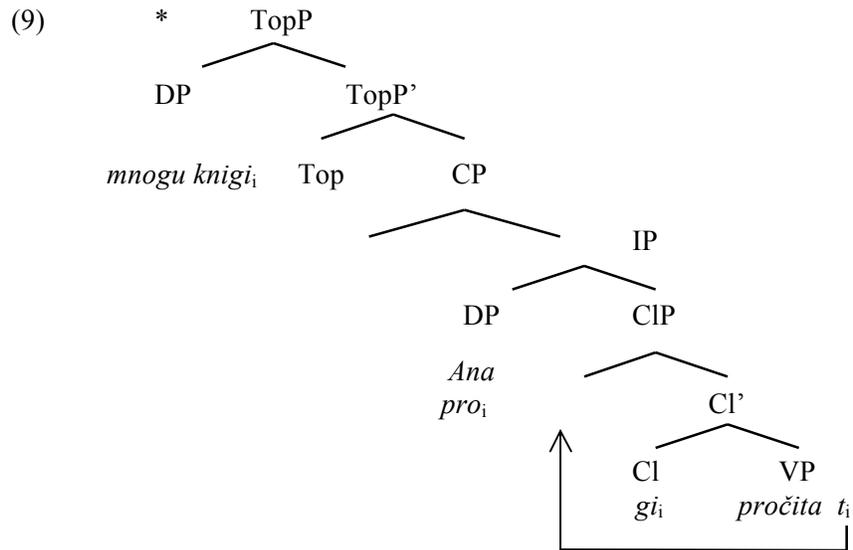


Under a movement analysis, the difference between the constructions in (7a) and (7b) comes out as a result of the Clitic Criterion. In the case of strong DPs, a CIP is projected, enabling the DP to check its [+strong] feature in SpecCIP, on its way to the left periphery. In the case of weak DPs (both [-strong] and unspecified for strength), there is no [+strong] feature, so the CIP is absent, for economy reasons. Thus, by evoking the same principles that explained the CD of pre- and postverbal DPs, we can explain the doubling of strong DPs in the left periphery and the absence of a doubling clitic with dislocated weak ones. What still remains unexplained is the presence of a clitic with unspecified weak DPs, such as those in (3b). Again, by treating the weak DPs uniformly, we predict that they should behave the same with respect to the Clitic Criterion.

I now turn to the second option, whereby direct objects are base-generated in their surface position at the left periphery. Under standard analysis, the DP in the clause-initial position in this case is connected to a *pro* in the argument position in IP. Given the conditions on chains (Cinque 1990, Baker 1996), the dislocated DP enters into a chain relation with *pro*. The derivation of a construction involving a strong left-dislocated DP will be as in (8).

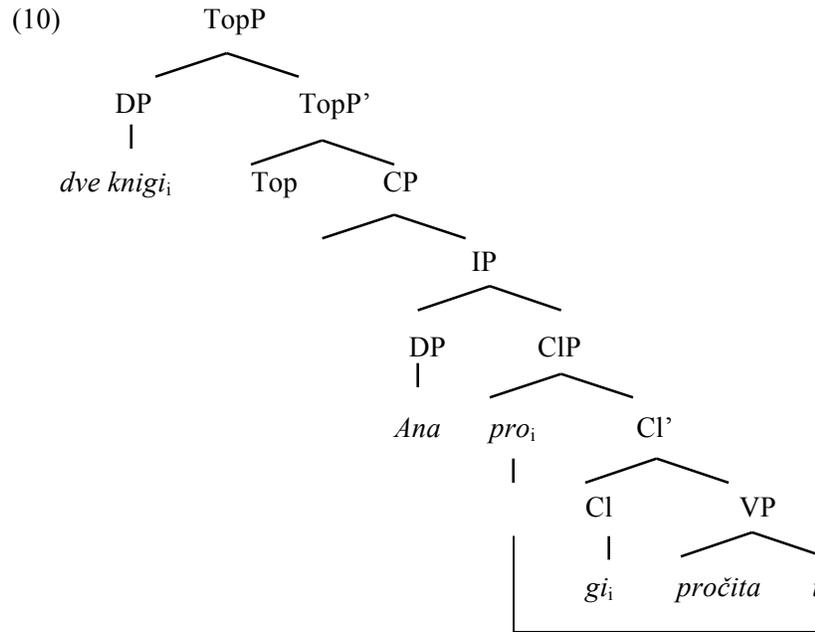


The presence of the clitic in (8) would be generated because of a [+strong] *pro*. Given that a [+strong] feature must be licensed for the derivation to converge, the clitic must be present. Thus, the explanation for its presence here is consistent with the analysis of CD constructions. In the case of [-strong] weak DPs the dislocated DP connects to *pro*, forming a binding chain. The configuration, however, is ungrammatical because the [-strong] feature of the DP in this case clashes with the [+strong] feature of *pro* (as well as that of the clitic). This follows from the requirement that syntactic chains share the same feature specification (Suñer 1988:394). As Suñer points out (1988:394) (and references cited therein), a chain is well-formed only when there is no clash in features between its elements; a clitic thus may form a chain with a constituent only if it fulfills this requirement.<sup>10</sup> We can extend this to include the dislocated DP as well. The ungrammaticality of constructions involving a left-dislocated [-strong] weak DP and a clitic in the IP thus follows from general conditions on chains. The derivation of constructions involving a left-dislocated [-strong] weak DPs is given in (9).



<sup>10</sup> This condition is fulfilled in all cases of CD in Macedonian: both the clitic and the doubled element are marked as [+strong].

In the case of weak DPs unspecified for strength (see (10)), the clitic is generated because of [+strong] *pro* in accordance with the Clitic Criterion. Given that it is unspecified for strength, the DP's features do not clash with that of *pro*, as a result of which the DP can enter into a binding chain. The derivation of left-dislocated numerals is given in (10) below.



To sum up, a strong DP is acceptable in a binding chain because its features are compatible to those of *pro* in the argument position. A [-strong] weak DP in a binding chain yields an ungrammatical sentence because its features clash with the features of *pro*. Thus, a construction involving a clitic-doubled dislocated *many/few* or a bare plural is ungrammatical. A weak DP which is not specified for strength can enter into a binding chain because it does not clash with the features of *pro*. Since chains have to share features, elements participating in them will either have the features inherently (as in the case of strong DPs) or they

will be able to acquire them from the chain (as in the case of unspecified weak DPs).

I have maintained that weak DPs that allow for clitics when left-dislocated remain unspecified (or change to [+strong] through the binding relation with *pro*). The next section provides evidence why such DPs are crucially not [-strong].

### 3 The Semantic Basis for the Distinction within Weak DPs

In the preceding section, I noted that there is a correlation between the ability of DPs to have specific (i.e. referential) interpretation and their (subsequent) feature specification. More specifically, I claim that weak DPs that allow for specific interpretation (cf. (3b)) are unspecified for strength and that weak DPs that do not allow for specific interpretation (cf. (3a)) are specified as [-strong].

The correlation between strength and specificity drawn here is supported by tests like (12a-b), i.e. tests that bring out the referential and exceptional scope reading of indefinites.

It is well-known that indefinites have a unique ability to take scope outside of syntactic constructions that otherwise restrict the scopal behavior of quantified expressions. As a result, (11a) has a reading where the indefinite *a friend of mine* scopes out of the *if* clause; this reading is not available to *each of the candidates* in (11b) (Fodor & Sag 1982:369-370).

- (11) a. If a friend of mine from Texas had died in the fire, I would have inherited a fortune.  
 b. If each friend of mine from Texas had died in the fire, I would have inherited a fortune.

(11a) can be understood to be about a particular friend that the speaker has in mind. (11b), on the other hand, cannot be understood to mean that each friend (of the speaker) is such that if he/she had died the speaker would have inherited a fortune. This means that the indefinite in (11a) has the ability to take scope outside of a syntactic configuration that otherwise imposes restrictions on scope, as with the universal in (11b).

Applying the test in (11) shows that the same restrictions holds for Macedonian. Consider (12a-b):

- (12) a. Ako požarot ubie *mnogu/malku* rodnini, ké  
 if fire-the kills many/few relatives will  
 nasledam kuća.  
 inherit house  
 ‘If the fire kills many relatives (of mine), I will inherit a house.’
- b. Ako požarot ubie *eden rodnina/dvajca* rodnini,  
 if fire-the kills one relative/two relatives  
 ké nasledam kuća.  
 will inherit house  
 ‘If the fire kills a relative/two relatives (of mine), I will inherit a house.’

The weak DPs in (12b) are able to get a specific interpretation.<sup>11</sup> Thus, (12b) can easily be understood to be about a particular relative of mine, such that if he dies, I would inherit a house. The numeral in (12b) can also be construed as being about a specific set of two relatives, i.e. the wide-scope existential in this case does not range over all my relatives, indiscriminately, but rather a specific set of two relatives (Schwarzschild 2002).

The weak DPs in (12a), on the other hand, do not lend themselves to such an interpretation. That is, (12a) cannot be understood to mean that many (or few) relatives (of mine) are such that if they are killed by the fire, I would inherit a house. In other words, the weak DPs in (12a) cannot get a specific interpretation.

(12a) and (12b) show a clear correlation between the presence/absence of specificity and that of clitics. They show that weak DPs that allow for a specific reading within IP, such as those in (12b), are exactly those that allow for clitics when they occur in the left periphery (cf. (3b)). Weak DPs that do not allow for a specific reading within IP, like those in (12a), are those that do not allow for clitics when they occur in the left periphery (cf. (3a)).

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<sup>11</sup> One of my main assumptions here is that specific indefinites are not a distinct type of DP. I.e., I explicitly assume that they are existential quantifiers with a quantifier domain restriction, as proposed by Schwarzschild (2002). Crucially, I do not treat them as semantically ambiguous (following Schwarzschild 2002; contra Milsark 1977; Fodor and Sag 1982; Diesing 1992; and others).

More importantly, (12a) and (12b) show that a specific interpretation of a weak DP in Macedonian does not entail a [+strong] feature. This is shown most clearly in the case of the weak DPs in (12b). If such entailment relation existed, we would expect the numerals to be CDed even when they occur in IP internal positions, which is not the case in Macedonian.

#### 4 Conclusion

In this paper I have argued for a three-way distinction between the DPs in Macedonian in terms of strength, with inherently strong DPs being marked as [+strong] and weak DPs splitting into two groups: [-strong] and unspecified for strength.

Tests showed that unspecified for strength weak DPs are those that allow for specific interpretation whereby [-strong] weak DPs are those that do not allow for specific interpretation

The three-way distinction within the DPs enabled us to account for the obligatory presence of clitics with strong DPs within IP and at the left periphery and the obligatory absence of clitics with weak DPs within IP, as well as the apparent optionality of clitics with weak DPs at the left periphery.

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## **Perfect Dependent Case<sup>1</sup>**

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### **1. Introduction**

There is an ongoing debate in the theoretical literature about the status of Case in the grammar. While some approaches argue that Case is a syntactic primitive and consequently plays a crucial role in the narrow syntax (Chomsky and Lasnik 1977 and subsequent work), a growing body of work argues that Case is a morphological reflex of a syntactic structure (Marantz 1991 and subsequent work).<sup>2</sup> Crucially, irrespective of the actual modality of Case, these approaches tend to analyze Accusative case (ACC) as a dependent Case. Dependent can mean either

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<sup>2</sup> Baker and Vinokurova (2010) provide an interesting argument that these two modalities are not a theoretical construct but instead have empirical counterparts, even within one language.

that ACC is dependent on another argument, as in Burzio (1986),<sup>3</sup> or it is dependent on a chain assigning Nominative case (NOM) to another argument (Marantz 1991).<sup>4</sup> In both approaches, ACC is the result of a grammatical competition. The Minimalist Program (Chomsky 2001, 2005, 2008) seems to be an exception to these approaches as, in this system, abstract Case is assigned by functional heads. Precisely, ACC is assigned by  $v^*$ .<sup>5</sup> Whether or not  $v^*$  assigns ACC depends on whether or not  $v^*$  is a strong phase.<sup>6</sup> Once we look closely at the system, however, a different picture emerges: even though the Minimalist Program does not seem to employ a competition view of ACC as a dependent case, at its core, it is a look-ahead system, in that whether or not ACC is assigned depends on the presence or absence of another argument (typically assigned NOM). Thus, though the dependency on another argument is not explicitly declared, it is inherent to the system. The role of dependency becomes apparent as soon as the case-assignment system gets clearly spelled-out, as, for example, in recent work by Sigurdsson (2006, 2010).

This paper attempts to challenge the view of ACC as a dependent Case by examining a certain syntactic pattern attested in Slavic languages (Polish, Ukrainian, and Northern Russian) in which ACC may appear in the absence of a NOM-marked argument or an external argument, thus questioning the very empirical core of the dependency view of Case. I will argue that the dependency view of Case is untenable and should be replaced with an alternative stated in terms of structure-dependency; precisely, in terms of phasehood (Chomsky 2005, 2008). Consequently, the paper touches upon more general questions of the role of Case in syntax and the nature of Spell-out domains.

The paper is organized as follows. First, I present data from Polish and Ukrainian, showing why they pose a challenge to the dependency view of Case. Then, I investigate the syntax and semantics of the relevant construction and argue that the construction in question is a type of *have-*

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<sup>3</sup> More precisely, a  $\theta$ -role.

<sup>4</sup> More precisely, not governed by a lexical case assigner.

<sup>5</sup> What exactly assigns ACC is subject to continuous debate. For example, according to Lavine and Freidin (2002), ACC is assigned by phi-features on  $v$ . For many authors, ACC is related to telicity or aspect. Concretely, ACC is assigned by a telic  $v$  head (Babko-Malaya 2003, Borer 1994, 2005, van Hout 2000, 2004, Kiparsky 1998, Kratzer 2004, Pereltsvaig 2000, Ramchand 1997, Richardson 2007, Svenonius 2002, among others).

<sup>6</sup> But see Legate (2003) for an alternate view.

Perfect with an optionally demoted external argument. Finally, I will show how this analysis relates to the more general question of Case assignment. Concretely, in order to account for the data, I will propose a Spell-out-based system of Case assignment.

## 2. Puzzle

Eastern Slavic languages (Polish, Ukrainian, and North Russian dialects) have a range of constructions that share some, but not necessarily all, properties of the English canonical passive. An especially interesting construction is the so-called *-no/-to* construction (henceforth NT), as exemplified in (1)–(2).

### (1) Polish:

- a. Pies był/został zabity przez samochód.  
 dog.M.SG.NOM was/stayed.M.SG killed. M.SG by car  
 ‘A dog was killed by a car.’ *canonical passive*
- b. Psa zabito.  
 dog.M.SG.NOM killed.N.SG  
 ‘A/The dog was killed.’ *NT*

### (2) Ukrainian:

- a. Žinky byly vbyty  
 woman.NOM.F.PL were.F.PL. killed.F.PL  
 ‘(The) women were killed.’ *canonical passive*
- b. Žinok bulo vbyto  
 woman.ACC.F.PL was.N.SG. killed.N.SG.  
 ‘(The) women were killed.’ *NT*

On the surface, NT resembles the canonical passive in that it does not have an overt external argument and the surface form of the main verb is identical to the passive participle form.<sup>7</sup> Yet, there are striking differences between the canonical passive and NT. The differences are of two different kinds: first, there are differences in the morpho-syntactic properties of the constructions (Case marking, agreement, Tense marking); and second, there are differences in the semantic interpretation

<sup>7</sup> Except for the inflectional ending, as we’ll see later.

of the constructions (temporal interpretation, information structure). I exemplify the individual differences below in examples from Polish.

(i) The internal argument in NT is realized as ACC instead of NOM in an apparent violation of Burzio's generalization, as seen in (3).

- (3) a. Psa zabito.  
 dog.M.SG.ACC killed.N.SG  
 'A/The dog was killed.'  
 b. \*Pies zabito.  
 dog.NOM.M.SG killed.N.SG

Evidence suggesting that the external argument is syntactically absent comes from the fact that NT can be formed by unaccusatives, raising verbs (Maling and Sigurjónsdóttir, 2002, p. 104, (11)) and modal verbs (Migdalski, 2006, p. 145, (61a)).

- (4) a. Balon rozerwano.  
 balloon.ACC pierced.N.SG.PP  
 'The balloon was pierced.' *unaccusative*  
 b. Zdawano się nas nie zauważać.  
 seem.IMP REFL us not notice.INF  
 'They seemed not to be noticing us.' *raising*  
 c. Musiano to wykonać, bo zbliżał się termin.  
 must.NT this do.INF because approached REFL deadline  
 '(They) had to do this, because the deadline was approaching.' *modal*

Note that the ACC marker behaves as a morphological reflex of a structural, not of a lexically-governed case. For instance, if the nominal argument of NT appears in the scope of a sentential negation, the ACC morphology is obligatorily converted to GEN, which is the usual pattern for structural ACC in this group of Slavic languages. The relevant data are given in (5).

- (5) a. Kobietę zabito.  
 woman.ACC killed  
 'A woman was killed.' ✓ *POS+ACC*

b. \*Kobietę/Kobiety nie zabito.  
 woman.ACC/woman.GEN not killed  
 ‘A woman was not killed.’ \*NEG+ACC

(ii) Even though the main verb is in a non-finite form, there is no overt Tense marking in the clause, which is rather unusual in Polish and impossible in the canonical passive.

(6) a. Kobieta była/została zabita.  
 woman.NOM was/stayed killed  
 ‘The/\*A woman was killed.’ *canonical passive*

b. Kobietę (\*było) zabito.  
 woman.ACC (\*was) killed  
 ‘A woman was killed.’ NT

(iii) There is no verbal element in the construction that can agree with the internal argument (or any other element in the structure). The agreement is always N.SG; in other words, the default verb agreement attested with weather predicates, i.e., predicates lacking an external argument.

(7) Psa zabito/\*zabity.  
 dog.M.SG.ACC killed.N.SG/killed.M.SG  
 ‘A/The dog was killed.’ ✓DEFAULT/\*AGR

(iv) Even though there is no overt temporal marking, the construction is compatible only with one temporal interpretation, namely, the Past tense. The Future or Present tense interpretation is excluded. No restrictions on temporal interpretation are attested with the canonical passive.

(8) Samochód jest/był/będzie malowany.  
 car.NOM is/was/will-be painted  
 ‘The car is/was/will be painted.’ *canonical passive: any tense*

(9) \*Teraz/✓wczoraj/\*jutro opisano problem.  
 now/yesterday/tomorrow described.N.SG problem.M.SG.ACC  
 ‘The problem was described/ they described the problem yesterday.’  
\*Present/✓Past/\*Future

(v) While the internal argument in the canonical passive tends to be interpreted as given, there is no restriction on the information-structure

properties of the internal argument in NT. As can be seen in (10), the internal argument can be interpreted as focus. The contrast between givenness and focus in the following examples is exemplified using the definite and indefinite English articles, respectively.

- (10) a. *Kobietę zabito.*  
 woman.ACC killed  
 ‘A woman was killed.’ *NT ~ FOCUS*
- b. *Kobieta była/została zabita.*  
 woman.NOM was/stayed killed  
 ‘The/\*A woman was killed.’ *canonical passive ~ GIVEN*

Ukrainian and North Russian dialects<sup>8</sup> differ from Polish in that their version of NT has an optional finite auxiliary.<sup>9</sup> When we consider NT with an overt auxiliary, further differences between NT and the canonical passive emerge.

(vi) Interestingly, even if there is an inflected auxiliary in the structure, the Tense interpretation is still restricted. Only the past tense and the future tense interpretation are possible. The Present tense interpretation is always excluded. The following example (11) is from Ukrainian.

- (11) *Presidenta bulo/\*jest/bude vbyto*  
 president.ACC was/is/will-be killed  
 ‘The president was/will be killed.’ *✓Past/\*Present/✓Future*

<sup>8</sup> This is true about one variety of Northern Russian NT. Northern Russian dialects have several distinct constructions related to NT. See Kuz'mina and Nemčenko (1971) for a detailed descriptive overview.

<sup>9</sup> It has been reported in the literature that Polish NT may contain a covert external argument, while Ukrainian never does (Sobin, 1985; Maling, 1993; Lavine, 2000; Maling and Sigurjónsdóttir, 2002; Maling, 2006, among others). I leave the issue of a possible covert argument aside for two reasons. First, even if a covert external argument is sometimes possible in Polish, it cannot be the source of the ACC marking on the internal argument as there are constructions that do not have an external argument (for instance, unaccusatives, modals and raising verbs). Yet, based on these predicates, NT still has the relevant case-marking properties. Second, I am not convinced that the generalization about the difference between Polish and Ukrainian is empirically correct. Kit (2012) reports that with certain verbs in Ukrainian, external-agent-like binding is also attested.

If there is no overt auxiliary, as in the Ukrainian example (12), Ukrainian and North Russian behave exactly like Polish: the NT structure is obligatorily interpreted as Past tense (Nedashkivska Adams, 1998).

(12) *Žinky vbyto.*

woman.ACC.F.SG killed.N.SG.

‘A woman was/(*\*is*)/(*\*will be*) killed.’

The NT construction has attracted a significant amount of attention in the literature (Sobin, 1985; Borsley, 1988; Maling, 1993; Billings and Maling, 1995; Nedashkivska Adams, 1998; Lavine, 2000, 2005, 2010a; Maling and Sigurjónsdóttir, 2002; Blevins, 2003; Danylenko, 2006; Kibort, 2008, among others). Crucially, most of the existing literature concentrates on the apparent violation of Burzio’s generalization (Burzio, 1986). Consequently, most of the literature concentrates on the ACC case assignment and the lack of agreement. As far as I know, none of the existing analyses account for all the basic properties of the construction (partially, because they do not address these properties). The majority of the work agrees that NT is some form of an impersonal passive (Sobin, 1985; Borsley, 1988; Billings and Maling, 1995; Nedashkivska Adams, 1998; Blevins, 2003; Kibort, 2008; Lavine and Freidin, 2002; Lavine, 2005, 2010b, among many others). Some authors argue that the Polish version of the construction is in fact active and that the passive morphology is a morphological ‘accident’.<sup>10</sup> Under these accounts, the apparent passive morpheme is analyzed as an incorporated auxiliary (Maling, 1993, 2006; Maling and Sigurjónsdóttir, 2002; Lavine, 2000, 2005, among others). Lavine and Freidin (2002) attribute the lack of NOM and agreement to the Tense head as being defective. According to Maling (1993, 2006); Maling and Sigurjónsdóttir (2002), the Polish NT contains a null subject that gets NOM; ACC is then assigned to the internal argument exactly as we expect (under this view, Ukrainian is a morpho-syntactic accident). Thus, according to some authors, there are language-specific exceptions to the Case assignment system (Sobin 1985 for Polish and Ukrainian and Sigurdsson to appear for a similar construction in Icelandic).

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<sup>10</sup> These analyses treat Ukrainian as structurally distinct from Polish.

Crucially, none of the existing proposals address the issue of the restricted tense interpretation and the unexpected information structure properties, (iv)-(vi). Also, no uniform account of the properties listed in (i)-(iv) has been proposed. In short, a new account of NT is needed.

### 3. NT as a *Have-Perfect Construction*

There are two main properties about the tense restrictions that remain unexplained under the existing proposals: (i) if there is no finite auxiliary in the structure, the structure must receive the Past tense interpretation; and (ii) if a finite auxiliary is present, it must be either in the Past or Future tense. The Present tense auxiliary is not possible.

Cross-linguistically, it is not unusual that structures without an overt Tense marking receive Past tense interpretation. So-called tense-less languages, i.e., languages that have no overt tense marking, either allow any tense interpretation,<sup>11</sup> or the lack of morphologically overt Tense marking, combined with certain Aspectual properties, allows only for the Past tense interpretation (Bohnemeyer and Swift, 2004; Jóhannsdóttir and Matthewson, 2008).

It is not clear whether the Past tense interpretation is the default interpretation of a phonologically null T head, or whether the T head is entirely missing<sup>12</sup> and the Past tense interpretation arises as the default semantic interpretation (for example, as in f-seq in Starke 2004 or via semantic strengthening of the interpretation of the event as in Bohnemeyer and Swift 2004). Either way, the behavior of NT might be less exotic than it appears at first glance.

The ban on the Present tense interpretation is more surprising. We know that in Slavic languages, the Present tense is excluded with perfective verbs. However, NT may be formed by both Perfective and Imperfective verbs. Furthermore, passive constructions do not display any such restriction on the tense interpretation cross-linguistically.

Interestingly, dialectology and descriptive linguistics literature (Kuz'mina and Nemčenko, 1971; Maslov, 1984; Trubinskij, 1988;

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<sup>11</sup> Even though the range of aspectual and other tense-related interpretations may still be restricted, see, for example, Fitzpatrick (2006). Unfortunately, it is not clear to me how to test for possible differences of this sort, mainly because of complex interactions of Tense interpretations with Aspect.

<sup>12</sup> For instance, because the CP phase is entirely missing.

Kuz'mina, 1993; Leinonen, 2002; Danylenko, 2006) often mentions that the syntactic distribution of NT resembles the West-European *habere* Perfect.<sup>13</sup>

I argue that NT is indeed a Perfect construction and that all the properties observed in Section 2 are a direct consequence of NT being a *have*-Perfect. This section provides semantic, syntactic and morphological evidence for this claim.

### 3.1 Semantic interpretation: Perfect

The key to analyzing NT lies in its semantic interpretation. If NT is indeed *have*-Perfect, its interpretation should differ from the canonical passive. Precisely, we should be able to find contexts in which only one interpretation, but not the other, is grammatical. This is exactly what we observe in (13)–(14), which provide contexts excluding stative resultative interpretations.<sup>14</sup> We see that whenever the resultative interpretation of the canonical passive is excluded, NT is still well-formed.

#### (13) Polish

- a. \*Anna jest szczęś'liwa od kiedy jej syn był zabrany.  
Anna is happy since then her son.NOM stayed taken-away  
*canonical passive*
- b. Anna jest szczęś'liwa od kiedy jej syna było zabrano.  
Anna is happy since then her son.ACC stayed.NT taken-away NT

*Intended:* 'Anna has been happy since her son has been sent away.'

#### (14) Ukrainian

- a. \*Anna je shtaslyva vid koly jij syn zabranij  
Anna is happy since then her son.NOM taken-away.PP  
*canonical passive*

<sup>13</sup> Note, Perfect does not equal Perfective.

<sup>14</sup> There are non-trivial complications that arise around differences between the Universal and Existential Perfect. I use the resultative interpretation because the right boundary of the time interval denoted by this type of *have*-Perfect excludes the time of the event denoted by the main clause. Notice, however, that a preliminary investigation suggests that there might be differences between Ukrainian NT with or without an auxiliary with respect to the exact delimitation of the right boundary of the time interval denoted by Perfect. I leave these questions aside for reasons of space. I refer the reader to Iatridou et al. (2001) for a cross-linguistic examination of the differences of this sort and their theoretical account.

b. Anna je shtaslyva vid koly jij syna zabrano.

Anna is happy since then her son.ACC taken-away.NT

‘Anna has been happy since her son has been sent away.’ NT

*Intended:* ‘Anna has been happy since her son has been sent away.’

### 3.2. *Passive syntax and morphology?*

If NT indeed has a Perfect interpretation, the immediate question that arises is how the Perfect interpretation could occur in a passive construction. The passive participle morphology is often identical to the perfect participle morphology cross-linguistically (Iatridou et al., 2001). It is thus plausible that what has been traditionally analyzed as a passive participle is in fact a Perfect participle. If this is correct, then the difference between Perfect and passive should reveal itself in the syntactic properties of the construction. In English, the canonical passive differs from the so-called adjectival passive (Wasow, 1977). This is not the case in Polish and Ukrainian (and Czech). In Czech,<sup>15</sup> the canonical passive may, and in Polish and Ukrainian, it must, be formed by the adjectival passive participle. Consequently, the adjectival morphology coincides with the syntactic structure we expect in adjectival and copular clauses (Veselovská and Karlík, 2004).<sup>16</sup> The prediction is that if NT is a passive construction, the relevant properties of the syntactic structure of the canonical passive should also be found in NT.

Let us consider two relevant properties that are testable for Ukrainian NT.<sup>17</sup> First, the canonical passive may contain two independent aspectual projections.<sup>18</sup> Second, the canonical passive may contain two independent negation projections. As the following examples show, unlike the canonical passive, NT may have only one aspectual projection and only one negation projection. This strongly suggests that the

<sup>15</sup> I build on Czech here as there is a syntactic analysis of the Czech canonical passive which can be readily used for the purposes of the present study. Crucially, as far as I was able to establish, the relevant structural properties of Czech passives hold for Polish and Ukrainian as well.

<sup>16</sup> Veselovská and Karlík (2004) investigate clitic-like properties, morphological contraction properties, colloquial forms, zero morpheme distribution and a dialectal variation.

<sup>17</sup> The tests cannot be done for Polish because there is no overt finite auxiliary, thus there is not enough overt morphology to control for the relevant properties.

<sup>18</sup> The canonical passive in this group of languages is essentially bi-clausal. See Veselovská and Karlík (2004) for more details.

syntactic structure of NT is radically different from the syntactic structure of the canonical passive.

(15) *Two independent aspectual projections impossible in NT:*

- a. *Žinky byvaly vbyty.*  
 woman.NOM.F.PL. were.HAB.F.PL killed.PF.F.PL.  
 ‘(The) women used to be killed.’ *canonical passive*
- b. \**Žinok byvalo vbyto.*  
 woman.ACC.F.PL was. HAB.N.SG. killed.PF.N.SG.  
 Intended: ‘Women used to get killed.’ *NT*

(16) *Two independent negations impossible in NT:*

- a. *Žinky ne buly ne vbyty.*  
 woman.NOM.F.PL not were.F.PL. not killed.PF.F.PL.  
 ‘It wasn’t the case that the women weren’t killed.’  
*canonical passive*
- b. \**Žinok ne bulo ne vbyto.*  
 woman.ACC.F.PL not was.N.SG. not killed.PF.N.SG.  
 Intended: ‘It was’t the case women were killed.’ *NT*

Finally, NT may resemble participle morphology but the actual inflection is distinct. While the canonical passive inflects as a deverbal adjective (Sobin, 1985; Lavine, 2000; Danylenko, 2006), the NT ending retains an older, so called short-adjectival, inflection. If the NT was inflected in the same way as the canonical passive, the neuter singular ending would be *-e*, and not the attested *-o*. This morphological fact thus provides additional evidence that NT is structurally different from the canonical passive. Precisely, the participle found in NT is a Perfect participle, not a passive participle.

Thus, three pieces of evidence (semantic, syntactic and morphological) seem to converge on the same hypothesis: NT is not a passive construction. Instead it is some form of Perfect construction, as suggested by the traditional grammarians. Once we adopt the Perfect hypothesis, more specifically the *have*-Perfect hypothesis, some facts immediately follow. First of all, cross-linguistically *have*-Perfect participles never agree with the subject (Kayne, 1993; Iatridou et al., 2001, among others). Thus, whatever agreement mechanism we adopt for *have*-Perfect participles naturally extends to NT. No additional

mechanism is needed. Furthermore, unlike in the canonical passive, there is no information-structure requirement on the internal argument. Thus, fact (iii) and (v) are both explained by the *have-Perfect* hypothesis, without the need to introduce any further assumptions or tools in the system.

### 3.3. The semantics of *have-Perfect* and the Tense restriction on NT

The question of interest is whether analyzing NT as *have-Perfect* might shed light on the Tense restrictions attested in the construction. There is a continuing debate in the literature on the semantic nature of Perfect, which amounts to the question of whether Perfect should be semantically analyzed as Aspect (i.e., in addition to Perfective and Imperfective) or as Tense. An interesting perspective is offered in von Stechow (to appear). von Stechow argues that Perfect is relative time but the denotation of *have* adds an additional aspect-like component.<sup>19,20</sup> Consequently, the denotation of Perfect is identical to the denotation of simple Past. The denotation of *have* then adds a requirement on the subinterval property, essentially the “extended now” of McCoard (1978), here modeled after Dowty (1979).<sup>21</sup>

(17) *Paslawska and von Stechow (2003, p. 322, (40))*

POST =  $\lambda P \lambda t \exists e . \tau(e) < t \ \& \ P(e)$  (“Perfect”)

(18) *XN-Perfect*

[[has]] =  $\lambda t . \lambda Pit . (\exists t') [t \text{ is a final subinterval of } t' \ \& \ P(t')]$   
(von Stechow, to appear)

The proposal has direct consequences for the Tense interpretation of NT. Since the denotation of the *have* component is XN, it is incompatible with the proper episodic “now” of the Present tense. Consequently, *have-Perfect* is compatible with the Past and Future interpretation but the Present tense interpretation is excluded. Furthermore, since the

<sup>19</sup> Perfect is thus semantically distinct from morphological Perfective and Imperfective.

<sup>20</sup> According to Iatridou et al. (2001), anteriority is not part of the meaning of the Perfect participle. Instead, anteriority follows from independent properties of the perfect time span, namely, from the fact that the eventuality always precedes the right boundary of the span. As far as I can tell, either of the proposals makes the same predictions for the issues at hand.

<sup>21</sup> Cf. also Iatridou et al.’s claim that *have-Perfect* is always XN.

denotation of POST is identical to the denotation of the Past tense, unless the time of the event is overtly shifted to the future, Past arises as the default interpretation, thus explaining the other crucial property of the NT construction.

However, a question immediately arises from this interpretation: if NT is really *have*-Perfect, why there is no auxiliary *have*? A suggestive answer comes from the distribution of *be* and *have* in Slavic dialects. Roughly, the distribution of *be* and *have* forms a continuum, with the Western dialects having a higher degree of *have* in comparison to the Eastern dialects. Even though Polish has possessive *have*, the syntactic distribution of *have* is very much restricted in the language. This restrictive distribution can be demonstrated by the fact that there is no auxiliary usage of *have* in Polish. Ukrainian is in between. In Russian, *have* is entirely gone. Consequently, if the morphological forms of *have* are missing in these languages, or at least if their auxiliary variants are missing, *have* cannot be used to mark Tense. Hence, Tense must (in Polish) and may (in Ukrainian) stay morphologically unexpressed. Alternatively, it may be realized by default auxiliary forms based on *be*, as in Ukrainian and North Russian dialects.

#### 3.4. Relevance of the lack of agreement?

The fact that the NT construction is an instance of *have*-Perfect in and of itself does not explain the ACC marking on the internal argument. A possible hypothesis worth investigating is whether the ACC assignment could be related to the fact that the *have*-Participle does not agree with the subject. Alternatively, one could ask whether the ACC assignment might arise because the Tense head is defective (Lavine and Freidin, 2002), and thus not able to assign NOM. This type of reasoning is based on the hypothesis that there is a connection between NOM and finite T (Chomsky 1980 and much subsequent work). Northern Russian dialects provide evidence suggesting that neither of these hypotheses is empirically adequate.

Northern Russian dialects have the same type of NT as Ukrainian and Polish.<sup>22</sup> Interestingly, these dialects have, in addition to the Polish/Ukrainian type of NT, a variant of the NT construction in which the

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<sup>22</sup> As I mentioned earlier, these dialects in fact have several distinct constructions related to NT (Kuz'mina and Nemčenko 1971).

internal argument is NOM, instead of ACC. Crucially, even if the internal argument carries the NOM marking, the finite auxiliary still fails to agree with the NOM argument, as shown in (19). It immediately follows that while the NOM marking and agreement might be related, in principle, they are two separate syntactic processes and therefore cannot be tied to the presence or absence of the same feature or functional head. Crucially, for our present discussion, only NT with ACC is compatible with the Perfect interpretation (Zhanna Glushan, p.c.), as shown in (20).

(19) *North Russian (Danylenko, 2006, p. 255–256, (18), originally from Kuz'mina 1993, 135–137):*

a. (u njego) syn (bylo) otpravleno

at him son.NOM.SG.M. be.N.SG.AUX.PRET send-away.N.SG.PP

‘His son has been sent away (by him).’

b. (u njego) parnja (bylo) uvedeno

at him fellow.ACC.SG.M be.N.SG. AUX.PRET take away.N.SG. PP

‘The guy has been taken away (by him).’

(20) a. \*Vot uže tre goda kak u nego syn v amerku uvezeno.

here already three years how by him son.NOM toAmerica taken away

b. Vot uže tre goda kak u nego syna v amerku uvezeno.

here already three years how by him son.ACC=GEN to america taken away

‘It has been three years since his son has been taken away to America.’

We can thus conclude that the Case assignment (or at least its morphological realization) is in principle independent of agreement. Consequently, the ACC case assignment in NT does not seem to have any direct relation to the Tense head. In the next section, I will propose instead that the ACC case assignment is a direct reflex of the *have*-Perfect structure.

#### 4. Dependent Case is Phase-dependent

I argue that there is no real dependency of ACC on NOM, or any other case for that matter. In fact, what looks like a structural (or

morphological) dependency is a consequence of phase-based syntax.<sup>23</sup> In a certain sense, my proposal revisits the view of Case in an early GB era and the intuitions therein, i.e., the pre-Burzio formulation of Case (Chomsky, 1981; Emonds, 1985). In Chomsky (1981), Case was a marker that made categories visible to the interpretive components of the grammar. An alternative to this proposal is to understand a “visibility marker” as a morphological realization of a syntactic structure, which is the view adopted, for instance, in Distributed Morphology (Halle and Marantz 1993). If case is solely a morphological realization of a syntactic structure, it is less likely to involve any case-internal specific dependencies beyond correlations already present in the syntactic structure.

Notice that the guiding intuition behind the dependency view of ACC is based on the frequent co-occurrence of the ACC marked argument with another argument. However, perhaps the fact that there are two arguments or argument chains in the structure does not really matter. Instead, the crucial fact is that the structure is big enough to allow Merge of two arguments. In other words, whenever we find ACC in environments other than NT, the first Merge of *v* and VP is not the maximal projection of *v*. In all these cases, *v*P has been further extended.<sup>24</sup>

As soon as we analyze the more common case of ACC assignment as an instance of a *v*P-structure extension, we are able to investigate the hypothesis that the ACC assignment in NT is a result of a more general structure extension. If this hypothesis is correct, we are forced to ask what might cause the relevant extension, as there is no external argument merged in the structure.

I argue that the extension is a result of NT being *have*-Perfect. If NT is *have*-Perfect, it should contain a *have*-related structure, i.e., a structure which is in a certain technical sense ‘transitive’.

For concreteness, I follow Kayne (1993) in arguing that whether a language has *have* or *be* depends on the head-movement properties of the language. In particular, *have* is an instance of a functional-head

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<sup>23</sup> Supporting evidence for this claim comes from the fact that ACC can be systematically found in measure phrases, i.e., in a syntactic environment lacking NOM (Henk van Riemsdijk, p.c.).

<sup>24</sup> I assume a version of Bare Phrase Structure with no vacuous structures (Chomsky 1995).

incorporation into *be*. Even though the languages discussed in this paper do not have the corresponding morphological realization of the auxiliary, I argue that the underlying syntactic structure is still present.<sup>25</sup> Specifically, I argue that head-movement-incorporation yields a structure extension that is responsible for the ACC assignment observed in NT.<sup>26</sup>

A question that immediately arises is: why should an extension matter? As argued on numerous occasions, most recently in Richard 2010 (and references therein), vP is a strong phase only if it is transitive. Typically, this is understood as V having a complement and v having a distinct specifier. However, as I have argued elsewhere (Kučerová 2012, in press), the relevant condition might instead have to do with the number of merge operations within the structure. Thus, for v to be a strong-phase head, v must participate at least in two instances of merge.

A possible explanation in support of this proposal comes from independent restrictions on linearization. If we adopt Chomsky's (1995) Bare-phrase structure version of the LCA (Kayne 1994), a head may be linearized only if it participates in two instances of Merge. I argue that a phase head can trigger Spell-out only if it can be linearized with respect to its complement. Even though the head itself is not sent out to the interfaces, the head is still required to satisfy the total ordering requirement necessary for linearization to be possible. Consequently, we can formulate a condition on Spell-out domains, as in (21) and (22).

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<sup>25</sup> An independent piece of evidence for *have*-Perfect to contain an additional functional structure comes from its semantics. Iatridou et al. (2001) observe that cross-linguistically the semantics of Perfect can be located solely on the participle only in *be*-Perfect languages. In *have*-Perfect languages, the participles are semantically less contentful and at least part of the meaning of *have*-Perfect must be associated with a higher functional structure. An analogical conclusion is corroborated in von Stechow (to appear) as discussed in Section 3.3.

<sup>26</sup> Whether or not head-movement extends the structure is the subject of a continuous debate, even though the issue arises only under certain definitions of c-command. (See Kayne (1994) for a discussion and for a proposal that avoids problems with governing traces in head-movement chains. See also Chomsky (1995) for a reformulation of the same idea within the Bare Phrase Structure framework.) I refer here to Fukui and Takano (1998); Toyoshima (2001); Mohr (2005); Matushansky (2006) who argue that head movement, like phrasal movement, targets the root and as such extends the tree.



are likely dealing with a whole range of constructions with different degrees of argument demotion.

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## ***What for* Diachronically\***

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### **1. Introduction**

This paper addresses the syntactic structure of the Russian *čto za* phrase (and possibly the *what for* phrase across languages) with two major claims; the first one is that the internal structure of the construction is based on a small clause. Under this assumption, I claim that the prepositional *for* in *what for* cross-linguistically arose as a predicator, which scopes over a small clause. Secondly, the construction goes through a stepwise development, expanding its domain, i.e., nominative to direct cases, then to oblique cases, and finally to prepositional cases. For this expansion, I assume that *what for* undergoes a categorial change from a clause to a phrase, changing *wh*-predication to *wh*-modification in status. The proposed analysis is based on the ground assumption that the Russian *čto za* construction has a language-internal source for its genesis.

The structure of the paper is as follows: in the following subsection, a brief overview of *what for* construction is provided. In section 2, I explore the historical development of Russian *čto za* from the emergence (section 2.1) to its expansion (section 2.2). A syntactic account for the observed stepwise development is discussed in section 3. Section 4

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addresses the question of what *what* in *what for* is. And section 5 concludes the paper.

### 1.1. The landscape of what for construction

In terms of the geographical distribution, this construction is observed in Slavic (Russian, Ukrainian, Polish, Czech, Slovak, Sorbian), Germanic (Danish, Dutch, Norwegian, Swedish, German, Faroese), and Baltic languages (Lithuanian, Latvian).

Here are some characteristic features, which bear much on the theoretical issues discussed below. First, for a substantial number of languages with the *what for* phrase, the preposition-like element *for* does not involve in case checking or case assignment, as is true with the Russian *za* in *čto za* phrase, see (1).<sup>1</sup>

- (1) Čto (èto) za kniga / \*knigu? (R)  
 what it for book<sub>NOM</sub>/ book<sub>ACC</sub>  
 ‘What kind of book is this (or what is this book for?)’

Second, *wh*-split is possible in general: a *wh*-noun can be sub-extracted for feature checking from below to the sentence initial position. That is, “*for* NP” does not necessarily have to pied-pipe.

- (2) Čto zdes’ otmečajut za jubilej! (R)  
 what here celebrate for anniversary<sub>ACC</sub>  
 ‘What anniversary is being celebrated here?’  
 (Zimmermann 2008:290, (2))

Lastly, the Russian *what for* phrases seem to be restricted in domain, appearing predominantly in subject and direct object positions. This distributional fact contrasts with the Germanic data (the state of art in Russian will be reconsidered in section 2.2).

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<sup>1</sup> Some grammatical terms are abbreviated as follows: birch bark letter (BBL: number in parenthesis refers to the numerical number given by the editions of *Novgorodskie gramoty na bereste*); masculine, neuter and feminine as grammatical genders (msc, ntr, fem); singular and plural as grammatical numbers (Sg, Pl); grammatical cases as nominative (NOM), accusative (ACC); genitive (GEN); locative (LOC); dative (DAT); instrumental (INS); particle (PART).

- (3) a. \*S čto za ljud'mi Maša obščetsja? (R)  
 with what for people<sub>INS</sub> Masha has contact  
 'What kind of people does Masha have contact with?'  
 b. Mit was für einem Hund hast du gespielt? (G)  
 with what for a<sub>DAT</sub> dog have you played  
 'What kind of dog did you play with?'  
 ((a) from Zimmermann 2008:292, (10), (b) from Leu 2008:11, (22a))

The most pressing question regarding *what for* phrases is how to account for the case-inertness of the *for* element. Our strategy here is to explore the diachronic path of the Russian *what for* phrases, which may shed light on the structure of this complex nominal expression and ultimately provide us with a hint of the identity of *for*.

## 2. The historical development of Russian *what for*

### 2.1. The genesis

With Popov (1879), and recently Moser (1994) and Danylenko (2001), I assume that the Russian *čto za* phrase developed from a binominal sentence, which is constituted by a *wh*-pronoun *čto* and a lexical noun to the exclusion of the prepositional element *za* (*Materialy* III, 1577).

- (5) i čto jazykъ ixъ ... i čto věra ixъ  
 and what language their ...and what faith<sub>NOM</sub> their  
 '[nor] what their language ... [nor] what their faith is.'  
 (Danylenko 2001:247, (2))

And example (6) is repeatedly reported in literature as the first attestation of *čto za*, dated from the late 15<sup>th</sup> to early 16<sup>th</sup> century.

- (6) čto se jest' namъ za plemja?  
 what<sub>NOM</sub> this is:pres 3sg u<sub>SDAT</sub> FOR tribe<sub>NOM</sub>  
 'What kind of a tribe is this to us?' (Moser 1994:241)

I second the suggested diachronic path, but a specific date on the first attestation seems to be updated. Example (7) is one of Novgorod birch bark documents.

- (7) Cto jesi dalʹ namʹ za klucka za nasʹ ne stotʹ  
 what<sub>ACC</sub> are gave us FOR steward<sub>ACC</sub> for us not stand  
 ‘What kind of steward did you assign to us?! He is worthless for  
 us.’ (BBL № 370, Zaliznjak 2004: 589)<sup>2</sup>

From the fact that (i) *cto* [which should read *čʹto*] is a part of an internal argument of the predicate *jesi dalʹ* and (ii) its referent must be a human from the context, it is reasonable to conclude that a sentence-initial *wh*-pronoun *čʹto* is a part of *čʹto za*. Dated to the second half of the 14<sup>th</sup> century at the latest, this attestation predates the sentence in (6) by a century or so.

The existence of the example (7) has some implications for the diachronic developments of the *čʹto za* phrase. Under my step-wise development hypothesis to be explicated below, it is highly conceivable that the initial stage, like (6), must have been reached well before that attested period, since (7) already exhibits an accusative case with a lexical noun.

## 2.2. The expansion

Turning now to recent developments, we find that the *čʹto za* construction is rapidly expanding the domain. *Grammatika 1970* (1970:572) prescribes the use of *čʹto za* only to the nominative case. But, *Russkaja Grammatika 1980*, Podlesskaya (2007) and Zimmermann (2008) allow the accusative as well, as in (8) and (2) cited above.

- (8) [čʹto za NP:ACC]  
 Čto za knigu ty čitaešʹ?  
 [what FOR book]<sub>ACC</sub> you read  
 ‘What kind of book are you reading?’

<sup>2</sup> A reviewer raises another possibility in translation, namely, a headless relative clause, where *cto* is a complementizer. Under this analysis, the sentential meaning would be “what you have given us instead of a steward is not good for us.” The argument seems reasonable as it stands alone. However, when the context is considered into account, it falls apart. First, one should appropriately answer how the pronoun *cto* ‘what’ can refer to a human entity. Second, the immediately following sentence *nasʹ prodaetʹ* ‘(lit.) sells us’ also implies a human referent as a sentential subject. For further arguments, readers are referred to Kwon (2013).

Certainly, *čto za* phrase widened its application from nominative to accusative environments. However, the expansion has gone further than noted in the literature. Examples in (9) are gathered from various sources.

## (9) a. [čto za NP:DAT]

Ja starajus' uznat', čto za človeku on budet podaren  
 I try find out what FOR man<sub>DAT</sub> it will given  
 'I try to find out to what kind of person it will be given.'  
 <[www.tsubaky.ru/tsu/master.php](http://www.tsubaky.ru/tsu/master.php) as of 01/15/12>

## b. [čto za NP:INSTR]

Čto za erundoj ty zanimaeš'sja?  
 what FOR nonsense<sub>INS</sub> you occupy oneself  
 'With what kind of nonsense are you occupied?'  
 (Pavel Amnuël', *Rassledovanija Borisa Berkoviča*)

## c. [čto za NP:GEN]

Čto za pesen ty naslušalas'!  
 what FOR songs<sub>GEN</sub> you heard plenty of  
 'What songs you have heard plenty of!'  
 (Aleksej Smirnov, *Mesto v mozaïke*)

Most speakers, including all my informants, take those examples to be acceptable. Even more surprisingly, *čto za* seem to encroach into prepositional phrases. For these expressions, grammatical judgments greatly vary among individuals.

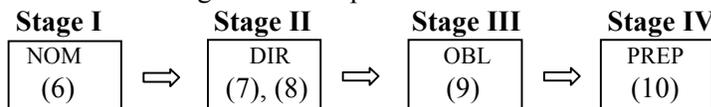
## (10) [Prep čto za NP:PREP]

- a. Gospodi, v čto za strane my živem?  
 Goodness, in what FOR country<sub>LOC</sub> we live  
 'Goodness, in what kind of country we are living?'  
 <<http://byazemanki.ucoz.ru/forum/24-4829-> as of 01/15/12>
- b. so čto za skorost'ju rasxodjatsja bilety s kass ...  
 with what FOR speed<sub>INS</sub> go away tickets from ticket offices  
 '...with what speed tickets will go away from the ticket offices'  
 <<http://import.ru/2009/07/page/233/> as of 12/28/09>

From the data above, it is conceivable to assume an incremental, step-wise development, from nominative (as in 1970-grammar) to direct

(linguists in and out of Russia, as reflected in *Russkaja Grammatika* 1980, and works by V. Podlesskaya and I. Zimmermann), and then to oblique (like my informants) and finally to prepositional stages (like “trail-blazers” on the web).

Figure 1. The spread of Russian *čto za*



It is worth noting that *v čto za strane* in (10a), unlike *so čto za skorost'ju* in (10b), does not seem to observe a phonotactic constraint that would dictate a buffer-like vowel between *v* and *čto*, giving a string, {*vo čto za strane*}. The eccentric behavior of *čto za* becomes more prominent, when compared with (11). When the two words in the string {*čto za*} do not form a constituent, a buffer vowel is inserted.<sup>3</sup>

- (11) [Vo čto] [za tysjaču let] prevratilas' Svjataja Rus'?  
 into what [after thousand years] turned Holy Rus'  
 'What did Holy Rus' turn into after a thousand years?'  
 (<http://magazines.russ.ru/druzhba/1998/9/annensk.html> as of  
 01/15/2012)

This contrast demonstrates that the idiomatic *čto za*, as in (10b), is phonologically transparent. In other words, the shape of a preposition is phonologically dependent upon the following lexical noun, hopping over *čto za*, hence, *v ~~čto za~~ strane* and *so ~~čto za~~ skorost'ju* (a strikethrough applied to mark its presumed invisibility).

In the following sections, I will propose a syntactic derivation of the Russian *čto za* with all these eccentricities and diachronic developments.

<sup>3</sup> A similar case can be made for the following examples, where different structures lead to different phonetic realizations (cf. Nevins 2011). This obviously concerns not linearity but constituency.

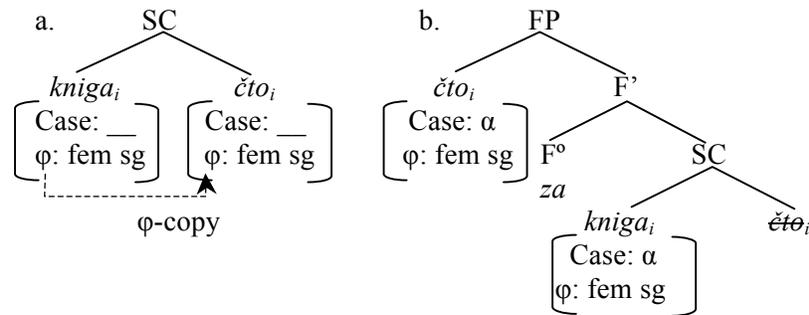
- i. a. U nego jest' kniga  
 at him is book  
 'He has a book.'  
 b. U [ego brata] jest' kniga  
 at his brother is book  
 'His brother has a book.'

### 3. My proposal: A small clause with a predicator *za*

#### 3.1. A theoretical preliminary: Nominative Stage

Let us start with the emergent Nominative Stage, where nominals can appear only in a nominative checking position. A lexical noun (NP<sub>1</sub>) and a *wh*-noun (NP<sub>2</sub>) forms predication, which serves as a small clause (henceforth SC) base at the baseline of derivation, as in (12a). At this base, the phi-feature of a lexical noun is copied onto the *wh*-pronoun. This postulation is indispensable; otherwise, a further mechanism should be stipulated to account for how a projection over this phrase can have access to a lexical noun down in the SC for case checking. I propose that the conceptual property between the two NPs, i.e., a predication relation, be captured by the co-indexation established at the SC base between a controller NP<sub>1</sub> and its contree NP<sub>2</sub>.

(12) Stage I: Nominative Stage





case valuation) is not determined until the merge of a further projection, such as VP or TP.<sup>4</sup>

Upon the merger of TP, the unvalued case is valued to [nom], which will simultaneously be set for the co-indexed lexical noun down in the SC base. Finally, *čto* moves to Spec,CP to have its [wh] feature checked via Spec,TP, as shown in (12c).

### 3.2. A categorial reanalysis

Crucially, the expansion of *čto za* construction to other cases beyond the nominative would be made possible only through the reanalysis of CP into DP structure.<sup>5</sup> As a catalyst for such reanalysis, I propose that a deictic use should have been predominant in the Nominative Stage. By “deictic” I mean *directly relating to the immediate present, now and here, around a speaker as a deictic center*. Given the expressiveness of the construction, it is not surprising that non-tensed (more precisely, present tense) variants like (13) might have been predominantly used to trigger the reanalysis of structure, CP to DP.

- (13) Čto      za      erunda!  
       what    ZA      nonsense  
       ‘What (utter) nonsense!’

After the suggested categorial reanalysis, the Russian *čto za* phrase could appear in non-deictic nominative and accusative cases, that is, for external and internal argument positions. The expressiveness of the phrase should be accountable for interpolating FocP (Focus Projection) inside the nominal phrase, as indicated in (14). I propose to term this stage of development as Direct Stage. As mentioned before, Russian prescriptive grammar limits the use of *čto za* phrase up to this point.

#### (14) Stage II: Direct Stage

[<sub>DP</sub> *čto* [<sub>D'</sub> *za* [<sub>FocP</sub> *čto* [<sub>Foc'</sub> *za* [<sub>FP</sub> *čto* [<sub>F'</sub> *za* [<sub>SC</sub> *kniga* *čto*]]]]]]]]]

<sup>4</sup> For the theoretical intuition that case valuation cannot be equated with the case interpretation, you may refer to Pesetsky and Torrego 2007.

<sup>5</sup> This reanalysis is grounded on the assumption that nominal and clausal projections are parallel in structure (cf. Giusti 1996; Corver and van Koppen 2005).

Once the clausal structure is reanalyzed as a nominal one, further extensions are expected to follow without much difficulty. However, we know that the transition from Direct Stage to Oblique Stage (excluding cases governed by prepositions) was not easy, taking several centuries. I submit that such recalcitrance should be ascribed to the nature of FP (and its epiphenomenal case concord). For the Oblique Stage to set in, this particular FP loses the capability of ensuring case concord. That is, I assume that the *wh*-pronoun *čto* is deprived of any case-related feature. Note that *čto* may bear [acc], as well as [nom].

One may ask why the derivation of *čto za* phrase or its internal structure can't be simple, as in (15). I believe that (12) and the like have obvious advantages over the simplified structure. First, we can see where the case-inert *za* comes from, which would otherwise remain stipulated or mysterious, at best. Second, the structure bears a direct relation to that one (14) for the Direct Stage reserved for conservative speakers and prescriptive grammarians. In other words, the innovative usage can be addressed in terms of parametric variations in *wh*-pronouns, i.e., the possibility of case interpretation.

(15) [<sub>DP</sub> *čto* [<sub>D'</sub> *za* [<sub>NP</sub> *kniga*]]]

The Prepositional Stage can be obtained if Oblique Stage *čto za* gets embedded into a prepositional phrase. That is, there is not any required structural modification for the development. This step of change, however, has not been set in motion for most speakers. This is most probably due to the potential distance between a preposition and a lexical noun, e.g., *v* and *strane* in *v čto za strane*, (10a).

I claimed here that the Russian *čto za* has been developing from a small clause in a stepwise manner, such that they are expanding their domain from nominative, to direct cases, then to oblique cases, and finally to prepositional cases. What adds more significance to this tendency is that the German *what for* underwent developments along the same path, from Nominative to finally the Prepositional Stage (Paul 1954: 302, cited from Danylenko 2001: 244).

#### 4. The origin (and identity) of *for* in *what for*

##### 4.1. Previous approaches

To identify the prepositional element *for* in *what for* is central to accounting for characteristic properties of the phrase. Some previous studies are introduced here for comparison.

Given the discontinuous nature of *what for* phrases in the early days, as in (6) and (8), one may alternatively assume that the *for* NP phrase initially appeared as an adjunct to specify the sentence-initial *what*, and later went through some kind of fusion process. It would be instructive to examine instances of discontinuous *what for* in some varieties of Midwest American English. The phrase introduced by *for* is obviously an adjunct, which may be sandwiched between other adjuncts, (16b), whereas *what for* phrase is ‘restricted to the (governed) argument positions’ (Dekydspotter et al 2005:89).

- (16) a. %What did John read for books over the summer at camp?  
 b. %What did John read over the summer for books at camp?  
 (Dekydspotter et al 2005: 89, (13,14))

This difference does not undermine the plausibility of the adjunct origin hypothesis. Rather, a real problem consists in the fact that an idiomatic *what for* does not limit its reference by human vs. non-human, whereas *what* in (16) can only refer to non-humans (or inanimate entities).

Another line of reasoning is to treat (or to find the source of) *for* as a prepositional complementizer. According to Bennis et al (1998), *voor* ‘for’ in the Dutch version (*wat voor*) of *what for* is introduced as a [wh] operator D-head, which scopes over the predication between a lexical noun (*jongen* ‘boy’) and a *wh*-word (*wat* ‘what’). The prepositional D-head is assumed to define interrogative force on the nominal expression.<sup>6</sup>

- (17) [DP *wat<sub>j</sub>* [D' *voor* [FP ~~*wat<sub>j</sub>*~~ [F' *een<sub>i</sub>* [XP *jongen* [X' *een<sub>i</sub>* ~~*wat<sub>j</sub>*~~ ]]]]]]]  
 (modified from (43), Bennis et al 1998: 110)

First of all, a similar (i.e., operator) function of the prepositional element, of which they find a correlate in other Dutch configurations, as shown in

<sup>6</sup> I will not discuss the so-called spurious indefinite article *een* in the Dutch case.

(18), is not observed in the Russian equivalent *za*. This immediately renders their hypothesis questionable or restrictive in scope at least.

- (18) een boek [Op voor in te kijken]  
 a book for into to look  
 ‘a book to look into’ (Bennis et al 1998: 108, (37))

Bennis et al (1998) consequently argues that a *wh*-pronoun does not have a *wh*-feature, whereas *for* does.<sup>7</sup> In their analysis, the Russian innovation from *čto za* in reference to humans in (19) cannot be easily accounted for, since there is no convincing reason other than the *wh*-feature that would legitimately replace *čto* with *kto* over any other lexical items.<sup>8</sup>

- (19) Kto (èto) za čelovek?  
 what it for man:nom  
 ‘What kind of man is this?!’

As the third, and most recent approach to *what for*, Leu (2008) proposes two subcomponents for *what for*, (20), drawing upon an exceptional fact that the lexical noun following *for* is case-assigned by an element to the left of *for*, i.e., outside *what-for*-NP. In his proposal, *for* is a prepositional complementizer whose complement contains the (silent) nominal SORT and the trace of *what*, to which *for* assigns the accusative case.

- (20) [<sub>WHP</sub> *what* [<sub>WH</sub> [<sub>FP</sub> [<sub>FORP</sub> *what* [<sub>FOR</sub> *for* [<sub>SC</sub> *what* SORT]]]] [<sub>F</sub> F<sup>o</sup> NP]]]]

Leu’s approach obviously has advantages over previous ones: it neatly accounts for the case-inert nature of *for*, and the kind semantics (‘what kind of...’) is integrated into structure. However, it seems pregnant with conceptual problems. Above all, it is doubtful how *for*P can be related to a lexical noun, despite his contention that *for*P is a modifying phrase. His proposed structure is conceptually inconceivable, since the modifier and

<sup>7</sup> Leu (2008:13, (26)) also argues against the idea that *for* carries a *wh*-feature, citing non-interrogative and non-exclamatory use of *what for* in German.

<sup>8</sup> A reviewer pointed out that the pronoun *kto* cannot be used in the construction. However, the fact that a Google search with the exact phrase in (19) produces several million hits suggests otherwise. Given this potential state of art, the reviewer’s question whether *čto* may be a complementizer rather than a pronoun loses ground.

the modified are in specifier and complement positions, skipping the head.

#### 4.2. Two kinds of predicator: A predicator *za*

An advantage of my hypothesis over other approaches to *what for* phrases becomes apparent: there is no need to care about the non-case-assigning ('case inert') property of the prepositional element *za*, since it is introduced into structure as a predicator. We will digress a bit into the discussion of predicators in general, for it constitutes a platform, from which my *za*-as-predicator analysis is based upon.

I submit that there are two kinds of predicators – high and low –, the denomination of which is respectively determined against the base-generated position of NP<sub>1</sub> (cf. Bowers 1993; Bailyn 2002). The structural differences as shown in (21) are not trivial. The low predicator (Pred<sub>LOW</sub>, 21b) is equipped with a case checking property, whereas the high predicator (Pred<sub>HIGH</sub>, 21a) is not. Patent features of a high predicator are (i) case concord (which is epiphenomenal in a small clause based structure) and (ii) the lack of a change-of-state semantics.

#### (21) Structural differences between two predicators

##### a. A high predicator (Pred<sub>HIGH</sub>)

$$[X' X^{\circ} [_{FP} NP_1 [F' F^{\circ} [Pred_{HIGH}] [_{SC} NP_1 NP_2]]]]$$

##### b. A low predicator (Pred<sub>LOW</sub>)

$$[X' X^{\circ} [_{PREDP} NP_1 [_{PREDP'} Pred^{\circ} [Pred_{LOW}] [_{NP} NP_2]]]]$$

(case assignment indicated by an arrow)

And sentences in (22) are relevant examples to the effect that a small clause subject and its predicate are assigned the same case under (21a).<sup>9</sup>

<sup>9</sup> Rappaport (1986: 253) provides a cogent view on why *kak* in these examples is not a complementizer introducing a reduced or elliptical clausal complement. Though plausible on this point, his main proposal to consider *kak* as a preposition is untenable, since there is not a single preposition without a case assigning property in Russian. For further criticisms, see Bailyn 2002.

- (22) a. B Ukraine net [privatizacii kak takovoj]  
 in Ukraine no [privatization<sub>GEN</sub> KAK such<sub>GEN</sub>]  
 ‘In Ukraine there is no privatization as such.’
- b. Ja ne sčitaju ego [pevcom kak takovym]  
 I neg consider him [singer<sub>INS</sub> KAK such<sub>INS</sub>]  
 ‘I do not consider him a real singer.’

Turning back to *čto za*, I implicitly have argued that the prepositional element *za* in *čto za* phrase is a high predicator that scopes over an SC. However, it is worth noting that a predicator *za* in present-day Russian as in (23a) is a low one, which is capable of checking [acc]. Such a shift in the nature of predicators should not be relegated to an ad-hoc remedy for the proposed two-kind predicator hypothesis. First of all, PredP structure (and low predicators) was not available in the history of the Russian language until the fourteenth century (for arguments for this specific claim, see Kwon 2010). Second, a previously high predicator *kak*, as shown in (22), can now act as a low one, acquiring a case (in this case, nominative) checking property, as in (23).<sup>10</sup>

- (23) Nužno oformit' [ètot ob''ekt kak voennaja baza]  
 necessary formulate this object<sub>ACC</sub> KAK military base<sub>NOM</sub>  
 ‘It is necessary to formulate this object as a military base.’  
 (Glovinskaja 2000:262-3)

Before concluding, my *for*-as-predicator analysis can without stipulation account for the Old Norse *what for*, in which a directional preposition was used instead of *for*, given the crosslinguistic fact that directional prepositions are one of the common candidates for a predicator, as in Russian *v* ‘into’ (cf. Vangsnes 2009, Bailyn 2002).

## 5. Conclusion

This study starts from a ground assumption that any account, whether syntactic or not, must address a current tendency regarding *čto za* phrase, i.e., the Russian *čto za* phrase is becoming or has become a Germanic

<sup>10</sup> Other low predicators are *za* assigning [acc] and  $\emptyset$  assigning [ins] (Bailyn 2002).

type. In this respect, I proposed the followings: (i) the *what for* phrase has evolved from a small clause structure, (ii) *for* (G. *für*, N. *voor*, R. *za*) developed as a predicator, and (iii) *what for* developed from a clausal to a nominal structure, i.e., *wh*-predication to *wh*-modification.

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## **The Basic Elements of Inflection: Morphophonology of Bosnian Nouns\***

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This paper deals with the morphophonology of Bosnian<sup>1</sup> nominal declensions. It proposes a new insight into the behavior of the vocalic alternations occurring throughout the system. It is shown that the final vowel of each Bosnian noun results from the combination of three distinct phonological items, and that these items are the exponents of one and only one morphosyntactic property. These exponents are the basic elements of a Bosnian noun and are combined in one complex marker in the phonology.

The analyses presented in this paper are consistent with the syntactic approach to word formation of Distributed Morphology (hereafter DM; Halle & Marantz 1993). In DM, morphemes are feature-bundles associated to syntactic terminal nodes. In what follows, I propose an interpretation of the mechanism of *spell-out*, which is the device responsible for the association of phonological form to these feature-bundles. In representing underlying phonological forms, I make use of the principles of CV phonology (Lowenstamm 1996).

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<sup>1</sup> I refer to (Bosno-)Serbo-Croatian as simply Bosnian as a tribute to my informant, Arnela, from Bosnia-Herzegovina. I am fully indebted to her for the time she has dedicated to me in answering boring questions on her native language.

### 1. Bosnian noun inflectional groups

Bosnian belongs to the west branch of the South-Slavic group. Morphologically, Bosnian is conservative: five different cases (I will not be concerned with vocative) have been preserved as well as a stable correlation between a gender and a given inflectional paradigm.

Each Bosnian noun displays an overt case marker, which changes throughout the paradigm. Following Browne (1993), I adopt a gender-based classification, built on the relation between gender and nominative case endings. Thus, nouns of each group are all of the same gender.<sup>2,3</sup>

#### (1) Gender-based classification<sup>4</sup>

	group 1: M		group 2: F		group 3: Neu	
	sg.	pl.	sg.	pl.	sg.	pl.
Stem	<i>okvir</i>	<i>okvir</i>	<i>kuć</i>	<i>kuć</i>	<i>sel</i>	<i>sel</i>
a. Nom	-	<i>-i</i>	<i>-a</i>	<i>-e</i>	<i>-o</i>	<i>-a</i>
b. Gen	<i>-a</i>	<i>-ā</i>	<i>-ē</i>	<i>-ā</i>	<i>-a</i>	<i>-ā</i>
c. Dat/Loc	<i>-u</i>	<i>-ima</i>	<i>-i</i>	<i>-ama</i>	<i>-u</i>	<i>-ima</i>
d. Acc	<i>-(a)</i> <sup>5</sup>	<i>-e</i>	<i>-u</i>	<i>-e</i>	<i>-o</i>	<i>-a</i>
e. Instr	<i>-om</i>	<i>-ima</i>	<i>-ōm</i>	<i>-ama</i>	<i>-om</i>	<i>-ima</i>
	‘frame’	‘frames’	‘house’	‘houses’	‘village’	‘villages’

All the nouns belonging to group 1 are M; neither F nor Neu nouns exist in this group. Nouns with the endings of group 3 are all Neu. The situation is slightly different in group 2: although the F nouns are the largest set, a small group of M nouns exist, such as *sudija* ‘judge’. Then, the way data are organized makes exceptions to be limited to the group 2.

<sup>2</sup> I adopt the official spelling rules, which consist in a slightly modified version of Latin alphabet. The following letters involve specific conventions: *š* = [ʃ], *c* = [t], *ć* = [tʃ], *č* = [ts], *dz* = [dʒ], *h* = [x], *j* = [j] and *nj* = [ɲ].

In addition, I use the following conventional abbreviations: Nom = nominative, Gen = genitive, Dat/Loc = dative/locative, Acc = accusative, Instr = instrumental; M = masculine, F = feminine, Neu = neuter; sg = singular, pl = plural, Num = number, K = case.

<sup>3</sup> Length in (1) has only illustrative purposes, cf. Matešić (1970) and Magner & Mateijka (1971).

<sup>4</sup> Dat and Loc are phonetically identical (not only in nominal, but also in adjectival and pronominal paradigms): for this reason, I use a unique label Dat/Loc (cf. Browne 1993).

<sup>5</sup> M nouns are marked by *-a* at sg ACC only when the referent is animate.

As a first and partial generalization, I consider that, in Bosnian, gender corresponds to the group. This point is crucial for my analysis. In the next section, I investigate the alternations of each inflectional ending.

## 2. Vocalic alternations and morphological properties

### 2.1 *The notion of final vowel*

Most of the Bosnian nouns end in a vowel. This fact is very important. It is not phonological: words can end in a consonant, e.g. *okvir* ‘frame’, *čitaš* ‘you.sg read’, etc.. In addition, despite the presence of five distinct syntactic cases, three genders and two numbers, the overwhelming majority of inflectional markers is formed by only one vowel. Exceptions to this generalization are found only in two cases. In one case, no marker appears at all: this is the M sg Nom, cf. *okvir* ‘frame’.<sup>6</sup> In such forms, a phonological zero replaces the alternating vowel. In the second case, instead of a simple vowel, a complex marker is found: the consonant /m/ follows a vowel (either *-i-* or *-a-*) and precedes either zero or *-a*. These are respectively the markers for Instr sg, Dat/Loc pl and Instr pl.

Now recall that gender corresponds to the classification in groups. If so, then gender is marked by one vowel. A closer scrutiny of the alternations of the final vowel reveals that this item changes following both the syntactic case and the number. Hence, these categories are both involved, in association to gender, in selecting the right quality of the inflectional markers. As a consequence, each occurrence of the final vowel is the overt marker of gender, number and syntactic case.

These observations lead us to make the following hypothesis on the nature of the final vowel:

- (2) The final vowel spells out three different morphosyntactic properties: gender, number and syntactic case.

The hypothesis in (2) raises a fundamental question, namely: what is the relation between the final vowel and the morphosyntactic properties that

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<sup>6</sup> Since Jakobson (1948), the interpretation of such a zero in the Slavic nominal systems consists in posing a *yer*, which is erased by a phonological rule. However, Bosnian *yers* never surface as the central high vowel [i] but only as a [a]: cf. nouns displaying *-a* vs. zero alternations, such as *maćak* (Nom) ‘a cat’ vs. *maćkom* (Instr) ‘with a cat’.

it spells out. Given that one vowel is the exponent of three distinct properties; do we expect the presence of three different phonological exponents at some level of the representation? The answer I propose in this paper is an affirmative one.

I consider that final vowels are complex objects with internal structure. Each occurrence of these items is the combination of three phonological objects: one object marks gender, one object marks number and one object marks syntactic case.

The next sub-section explores the idea of a unique spell-out per category and defines the morphological role of the basic phonological objects.

### 2.2 *A morphologically complex object*

It is generally assumed that Slavic nouns have an underlying form of the type Root + Theme + Case/Number (cf. Halle & Nevins 2009 among the most recent works). Work on the nominal morphology of both related and unrelated languages has often assumed a similar underlying sequence (Halle 1992 for Latvian, Halle & Vaux 1998 for Latin and Armenian, Müller 2005 for Russian and Weisser 2006 for Croatian).

I assume that nouns are sequences of a root followed by three distinct morphemes: gender, number and case. This is shown in (3):

(3) Root + gender + number + case

Each functional morpheme shown in (3) corresponds to an independent terminal node.<sup>7</sup> In addition, (3) corresponds to the linear order of the three phonological exponents hypothesized in the previous section.

Now, recall all the occurrences of final vowels as shown in table (1).<sup>8</sup> As already observed, only the M sg Nom is marked by a phonological zero. According to the sequence in (3), such a phonological zero must be considered as the result of three underlying morphemes. Only one

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<sup>7</sup> The sequence shown in (3) and the one proposed by Halle & Nevins (2009) differ with respect to the following crucial point: in the former, two distinct properties, number and case, appear as two distinct morphemes at all levels of representation, whereas in the latter, these properties appear as a unique underlying complex morpheme: {number/case}. Thus, the complex morpheme {number/case} can be spelled-out only if *Fusion* (Halle & Marantz 1993: 136) is postulated.

<sup>8</sup> I will not deal with *-ma* and *-m* in this paper.

solution exists, namely that this zero is in fact a sequence of three zeroes.<sup>9</sup> In other words, given an M noun such as *okvir* ‘frame’, and considering the sequence in (3), the only possible view is that each exponent deriving this zero is phonetically null. This is shown below:

$$(4) \sqrt{\text{OKVIR}} + \emptyset_{\text{gender}} + \emptyset_{\text{Num}} + \emptyset_{\text{K}} = [\text{okvir}]$$

From the situation described above, three important generalizations regarding the nature of M, sg, and Nom follow. Each one of these properties is spelled-out as a zero:

- (5) Zero morphemes<sup>10</sup>
- a. Gender: M is marked by zero
  - b. Number: sg is marked by zero
  - c. Case: Nom is marked by zero

The situation in (4) and (5) has important implications for our reasoning. But these can be captured only if we first analyze the phonological nature of the vowels involved in the inflection.

The Theory of Elements (Kaye et al 1985) allows for the decomposition of the phonological segments. More precisely, Kaye et al.’s approach considers that each vowel is a complex object formed by at least one basic Element. Bosnian has five vowels: [a], [e], [i], [o] and [u]. This theory predicts the following underlying expressions:

- (6) Vocalic expressions for Bosnian
- a. [a] = /A/
  - b. [e] = /A.I/
  - c. [i] = /I/
  - d. [o] = /A.U/
  - e. [u] = /U/

The data in (1) are replaced by the corresponding vocalic expressions in (6). This is shown below:

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<sup>9</sup> This situation is possible precisely because I make the hypothesis that a Bosnian noun results from the phonological combination of three distinct underlying objects, as shown in the sequence (3). In other words, in my approach, there can’t be a deletion rule that eventually makes a zero out of a sequence of non-null phonological items.

<sup>10</sup> Phonologically null morphemes are part and parcel of DM analysis.

## (7) Decomposed vocalic case endings

	group 1: M		group 2: F		group 3: Neu	
	sg.	pl.	sg.	pl.	sg.	pl.
a. Nom	∅	I	A	A.I	A.U	A
b. Gen	A	A	A.I	A	A	A
c. Dat/Loc	U	I	I	A	U	I
d. Acc	A	A.I	U	A.I	A.U	A
e. Instr	A.U	I	A.U	A	A.U	I

By hypothesis, the M sg consists of a sequence of two zeroes (the exponents of M and sg, respectively) followed either by another zero (the exponent of Nom) or a non-null exponent. The latter is the exponent of the syntactic case. For instance, /U/ is the exponent of Dat/Loc case.

Similarly, the row containing the Nom is formed by a sequence of at least one zero (the exponent of Nom) and two other Elements. For instance, in group 2, the Element A appears at the sg. As both the sg and the Nom are spelled-out as a zero, A must be related to the F gender.

In the next sub-section, I focus on the Nom.

## 2.3 Elements, roots and exponents

Final vowels are involved with gender, number and syntactic case. I start from the data of the Nom. This case is spelled-out as zero and its occurrences are formed only by two Elements. Therefore, it is possible to focus only on gender and number exponents.

Recall the sequences underlying each final vowel in the Nom (cf. 7.a). These data are recast below:

(8)	M	F	Neu
a. sg	∅	A	A.U
b. pl	I	A.I	A

M is marked by zero, as stated in the zero-morpheme hypothesis in (5). Sg is also marked by zero. In addition, two further generalizations can be made: first, F is marked by the Element A and, second, M pl and F pl are expressed by the same item, the Element I (henceforth IPL). We do not

find the Element I in the Neu pl, a fact I will return to later in section 3.2.2.

As for Neu sg, I consider that the Element U is the exponent of the Neu.<sup>11</sup> In addition to the gender exponent, Neu is marked by the Element A both at the sg and the pl. In the latter case, the Element A appears alone. I propose that this Element A is the exponent of the Acc for a reason to be explained later, in section 3.1.

Each pairing of a phonological exponent and its context of insertion (the feature-matrix) is referred to as a Vocabulary Item (henceforth VI) in DM literature (cf. Embick & Noyer 2007:294-295). The list of the VI's concerning the gender and the number in the Bosnian nouns is shown below:<sup>12</sup>

(9) Gender and number VI's

- |                         |                 |
|-------------------------|-----------------|
| a. [+gender, -F] ⇔ zero | d. [-pl] ⇔ zero |
| b. [+gender, +F] ⇔ A    | e. [+pl] ⇔ IPL  |
| c. [-gender] ⇔ U        |                 |

As for roots, I assume that they bear a template when they enter into the derivation (cf. Lowenstamm 2008). In this template, composed of strictly-alternating C and V slots, the final V slot is always free.

(10) Bosnian Roots

a. M-roots	b. F-roots	A	c. Neu-roots	U	d. Neu-roots
o k v i r	k u ć		s e l		p o l j U > I
CVCVCVCV	CVCV		CVCV		CVCV

<sup>11</sup> An additional subgroup of Neu nouns must be mentioned: *polje - polja* 'field(s)'. The main feature of these nouns is that they end in *-e* (instead of *-o*) in the Nom and Acc of the sg. Conversely, pl Nom and pl Acc display the regular *-a*. Browne (1993) claims that the alternation *-o* vs. *-e* is due to the palatalizing effect of the last radical consonant, namely [ts], [tʃ], [dʒ], [ʃ], [ʒ] and [ʎ] (I am aware of only one counterexample to this generalization: *more* 'sea'). Thus, the sequence underlying the final vowel of *polje* in the sg. Nom is A.I. The alternation between the Elements U and I is phonologically driven: U > I when the root ends in a palatalizing consonant.

<sup>12</sup> I follow Lowenstamm (2008) in assuming that Neu is the "absence" of gender: [-gender].

We can now turn to the phonological exponents of the syntactic cases.<sup>13</sup>

The identification of each exponent of the syntactic cases follows from the zero-morpheme hypothesis, cf. (4) and (5). As already discussed, both the M and the sg are marked by zero; it follows that each surface final vowel in the M sg. paradigm is the exponent of a syntactic case, cf. table (7). The Elements appearing in the column corresponding to M sg can be formalized as a list of VI's. For a reason that will become clearer in the next section, I propose to include a unit CV in the representation of each exponent. Thus, each VI is a complex spell-out made of both segmental and skeletal material. The full list is shown below:

(11) Syntactic case VI's

a. Nom: ⇔	zero	c. Dat/Loc: ⇔	U	e. Instr: ⇔	A.U
	CV		CV		CV
b. Gen: ⇔	A	d. Acc: ⇔	A		
	CV		CV		

Each terminal in the structure receives the VI corresponding to the case associated to it.

The next section is devoted to show how nouns are formed in syntax and how the phonological items are put together once terminal nodes have been spelled-out.

### 3. The syntactic formation of a noun

#### 3.1 The mechanism of noun formation

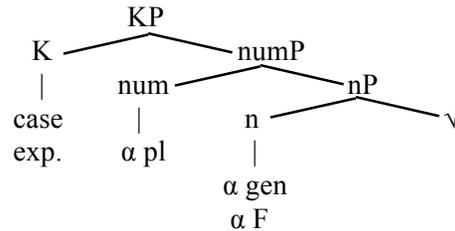
In this section, I deal with the syntactic aspect of the noun formation in Bosnian.

The first stage of the formation of a noun corresponds to the underlying syntactic structure. I propose the following structure:<sup>14</sup>

<sup>13</sup> Since Jakobson (1962), the syntactic cases have been represented by of feature-matrices. Space reasons, though, do not let me go through this analytical path. For Russian, see Franks (1995).

<sup>14</sup> A reviewer pointed out that the syntactic representations like those in (12) and (13) don't seem crucial for the analysis. The allomorphy rules could be formulated in terms of

## (12) Basic structure of a Bosnian noun



The category-defining head *n* contains the gender (cf. Lowenstamm 2008), whereas *num* introduces number features. Finally, a projection *K* is needed to account for the syntactic case.

Terminal nodes are subsequently spelled out. Spell-out is triggered as a result of the merger between the head of a phase and a part of the structure (Chomsky 2001). Following Embick (2010:37ff.), I take the head *n* to be the only phase head in the structure above. Once a phase is completed, its complement is phonologically computed. The first spell-out thus includes only the root, whereas the second contains the exponents of the gender, the number and the case.<sup>15</sup> A restrictive condition on syntactic movement, known as the Phase Impenetrability Condition (PIC), states that the phonological material is excluded from further phonological computation once it has been spelled out. The three exponents of gender, number and case can be phonologically computed together precisely because they are spelled-out in the same phase.

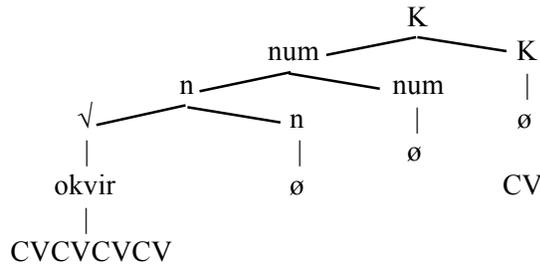
Once all the terminal nodes have been spelled-out, a complex head is created. The complex head of *okvir* ‘frame’ M sg. Nom is shown below:

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linear, rather than hierarchical, sequences. Space reasons do not let me discuss this point with the attention it deserves.

<sup>15</sup> I assume that *D* is the head of the phase containing *n*, *num* and *K*. Determining the exact boundaries of a phase and the limits of PIC is an open debate that cannot be discussed in this paper; see Marvin (2002) and Scheer (2011: 563ff.) among the most relevant ones.

(13) Complex head of *okvir* ‘frame’ M sg. Nom



The phonological exponents are combined into a well-formed noun through the linearization process, as shown below:

(14) Linearization of *okvir* ‘frame’ M sg. Nom

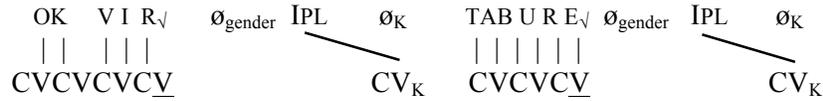


Because all three exponents are segmentally null, (14) cannot indicate the role played by the external CV unit (labeled CV<sub>K</sub>). Now, why do we need this position although the root has a free V slot in its template (the underlined position in 14)?

This question has two answers. First, the V position in the template of the root is inaccessible to inflection because it is spelled-out in the phase headed by *n*. Thus, when the three exponents under *n*, *num* and *K* are spelled-out, the complement of *n* (the root) cannot be modified. The second answer comes from the existence of a few particular nouns, which end in a vowel but are M. These nouns are stress-final and loanwords: *tabure* ‘stool’, *buro* ‘office’, etc..<sup>16</sup> As these nouns end in a vowel, their template has no free V position. Then, an external site is necessary for the final vowel to surface. This is the unit CV<sub>K</sub>. The comparison of the linearization of both *okviri* ‘frames’ and *taburei* ‘stools’ makes the situation clearer:

<sup>16</sup> They have an M paradigm: *tabure* sg. Nom, *taburea* sg. Gen, *taburei* pl. Nom, *taburea* pl. Gen, etc.. Conversely, a loan ending in an unstressed vowel is F: *jedna gorila* one.F.sg gorilla.F.sg ‘a gorilla’.

(15) Linearization of *okviri* ‘frames’ and *taburei* ‘stools’ (M pl. Nom)



As for F nouns, they differ on the phonological nature of the gender exponent. The plural *kuće* ‘houses’ best illustrate this:

(16) Linearization of *kuće* ‘houses’ F pl. Nom



The representations of *okvir* ‘frame’, *taburei* ‘stool’ and *kuće* ‘houses’ follow from the phonological analysis I have proposed in section 2.

We can now go back to the Neu nouns that have been left aside in section 2.3, in the discussion of the exponents of gender and number. Neu nouns are slightly more complicated than M and F ones. As observed above (cf. 11), this is due to two facts: first, the presence of the Element A at both the sg and the pl and, second, the lack of the exponent IPL in the pl.

An additional peculiar feature of the Neu paradigm is the syncretism between the Nom and the Acc forms. This is a common aspect of the Neu throughout the Indo-European languages. In Bosnian, the Element to account for in the Nom is of the same quality as the exponent of the Acc: both are the Element A. Thus, the syncretism can be formalized by generalizing the presence of the Element A in both the Acc and the Nom. A Neu noun is marked by A in the Nom precisely because this exponent replaces the zero proper to the Nom. Thus, both Nom and Acc are spelled out as a unique VI:

(17) Nom-Acc syncretism at Neu: Nom/Acc ⇔ A

The underlying sequence of a Nom/Acc Neu noun is given below:

(18) SEL<sub>v</sub> + U<sub>gender</sub> + ∅<sub>Num</sub> + A<sub>K</sub> = *selo* ‘village’

The hypothesis on a unique exponent for the Nom/Acc accounts for the presence of the Element A in both the sg and the pl. However, this does not explain why the pl lacks the regular exponent IPL. In fact, we expect a Neu pl Nom/Acc to be marked by a sequence containing the exponents U (Neu), IPL and A (Nom/Acc), as shown below:

(19)  $SEL_{\checkmark} + U_{\text{gender}} + IPL_{\text{Num}} + A_K = [*sele]$  ‘villages’ (attested form: *sela*)

The Theory of Elements predicts that in a five-vowel system, front rounded vowels are prevented from surfacing. Bosnian has five vowels and none of them is a front rounded one. I consider that when Elements U and I co-occur, it’s I that surfaces.<sup>17</sup> Thus, the combination between U and IPL in (19) cannot take place and only IPL will fuse with A. In addition, I consider that an allomorphy rule applies. Following Embick (2010), I take such rules to be post-syntactic and to apply exclusively on the phonological strings. However, they are sensitive to the position of each phonological exponent with regard to the syntactic terminals. The rule I postulate is the following:

(20) Neu Nom/Acc allomorphy:  $IPL \Rightarrow \text{zero} / \_\_\_ A_{\text{NOM/ACC}}$ .

This rule erases IPL in the context of the direct cases, Nom and Acc.

The next section is devoted to the formation of the rest of the syntactic cases.

### 3.2 The cases from Gen to Instr

The mechanism depicted in this paper tests the hypothesis that each morphosyntactic category spells-out as a unique phonological exponent. The relation between a phonological sequence and a given category is conceived of as a one-to-one relation. As a consequence, the VI’s established for gender, number and syntactic case apply everywhere in the noun paradigm (that shown in 1).

Given a root, and knowing its gender, we can then build a grill containing three-exponent sequences. This is shown below:

---

<sup>17</sup> Note that the Theory of Elements does not predict what Element will surface, rather it does predict that they cannot fuse into [y] or [ø]. Passino (2009) detects an identical phenomenon in Italian: /lupU+I/ = [lupi] ‘wolves’ instead of [\*lupy].

## (21) Predicted morpheme sequences

	group 1: M		group 2: F		group 3: Neu	
	sg	pl	sg	pl	sg	pl
Nom	ø.ø.ø	ø.IPL.ø	A.ø.ø	A.IPL.ø	U.ø.A	U.IPL.A
Gen	ø.ø.A	ø.IPL.A	A.ø.A	A.IPL.A	U.ø.A	U.IPL.A
Dat/L.	ø.ø.U	ø.IPL.U	A.ø.U	A.IPL.U	U.ø.U	U.IPL.U
Acc	ø.ø.A	ø.IPL.A	A.ø.A	A.IPL.A	U.ø.A	U.IPL.A
Instr	ø.ø.[A.U]	ø.IPL.[A.U]	A.ø.[A.U]	A.IPL.[A.U]	U.ø.[A.U]	U.IPL.[A.U]

Thirty different sequences must be accounted for. The Nom has already been analyzed, cf. the previous section. Each additional line contains the data of the other syntactic cases. The color of the cell points to the degree of correctness of the analysis. White cells indicate that the predictions are borne out: the sequence shown in the table above surfaces as the correct surface vowel. These are mainly the sg patterns (with the exception of the Gen, Dat/Loc and Acc in the F) with the addition of the Nom and four instances among six of the Acc. On the other hand, colored cells contain those sequences that are not predicted by the current system. These include mainly plurals and Neu sg. Gen. The Gen seems to be the most problematic case for our analysis.<sup>18</sup>

Consider the degree of grey of each cell. Light grey cells contain only the Dat/Loc and the Instr plurals of both the M and the Neu. In all four cases, the attested surface vowel is *-i*. I consider that *-i* corresponds to the exponent IPL. Now, notice that the Dat/Loc and the Instr can be merged in other Indo-European languages, e.g. in Ancient Greek, and that the same fact holds for the M and the Neu (cf. Modern Romance Languages). Thus, the fact that, in Bosnian, the Dat/Loc and the Instr plurals of the [-F] genders form a unique group with respect to their inflectional ending is not surprising. As for the reason why only the Element I surfaces, the solution must be found in the Theory of Elements itself.

Consider the underlying sequences of each light-grey cell:

## (22) Underlying sequences (light grey cells)

a. M pl Dat/Loc: ø.IPL.U => [i]    c. Neu pl Dat/Loc: U.IPL.U => [i]

<sup>18</sup> The shaded cells involve precisely the most marked categories in the system. The Gen, the Dat/Loc and the Instr are marked since they are [+oblique], whereas pl is [+pl] and F is [+gender,+F].

b. M pl Instr:  $\emptyset$ .IPL.[A.U] => [i]    d. Neu pl Instr: U.IPL.[A.U] => [i]

As already mentioned above in section 3.1, the Elements U and I cannot undergo fusion in a five-vowel system such as the Bosnian one. Only one Element surfaces. Again, this is I.

Unlikely cases in (22), dark-grey cells are slightly more complicated. In the majority of these cases, the surface vowel is [a]. The only exceptions are the Gen, the Dat/Loc and the Acc of the F sg paradigm. These sequences display an additional problem: the Element that surfaces is not there underlyingly. I propose a set of allomorphy rules like the one applying to the Neu Nom/Acc, cf. (20). These problematic cases can then be solved by the three rules below:

(23) Problematic sequences allomorphy rules

- a. Dat/Loc => I /  $\sqrt{\text{---}}A_F$ .    c. Element => zero /  $\sqrt{\text{---}}\text{Dat/Loc-Acc}$ .  
 b. Acc => U /  $\sqrt{\text{---}}A_F$ .

Rules (23a) and (23b) enforce Dat/Loc and Acc to surface as I and U, respectively (instead of U and A). This happens only when their exponents are adjacent to both the root and the exponent of the F gender. Rule (23c) erases any Element being between the root and either the Dat/Loc or the Acc.

In all the other dark-grey cells, the surfacing Element is [a] and this is there underlyingly (cf. 21 above). The Gen being the most complex case, I postulate the following two rules:

(24) Gen allomorphy

- a. Element => zero /  $\text{---}A_{GEN}$ .    b. zero => I /  $\sqrt{F/sg}\text{---}A_{GEN}$ .

Rule (24a) erases any Element adjacent to the exponent of the Gen. Note that the fusion between U and I is not possible, thus only the Element I surfaces in the Gen Neu pl. Then rule (24a) erases this I as it precedes  $A_{GEN}$ . On the other hand, rule (24b) inserts I in the Gen F sg. The former rule explains the Gen M pl, the Gen F pl, the Gen Neu sg and the Gen Neu pl. The latter formalizes the presence of an additional Element in the Gen F sg.

In addition to (23) and (24), we need the following set of rules. These apply to the F pl Dat/Loc and Instr:

(25) F pl. Dat/Loc and Instr allomorphy:

- a. IPL.U => zero / A<sub>F</sub>\_\_\_Dat/Loc and Instr.
- b. IPL.[A.U] => zero / A<sub>F</sub>\_\_\_Dat/Loc and Instr.

The two rules above account for the presence of [a] in the F of both the Dat/Loc pl and the Instr pl.

#### 4. Conclusion

In this paper, I proposed a novel analysis of the final vowel of the Bosnian nouns. I showed that this vowel is a complex object, formed by the combination of three phonological items. Each one of these represents the unique spell-out of a particular gender, number or syntactic case. The phonological nature of these items is restricted to three basic Elements: A, U and I with the addition of zero. Each final vowel is the result of a phonological operation that applies independently of the syntactic derivation.

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## **Slavic *Comitatives* and Bare Phrase Adjunction**

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There is an extensive and empirically rich literature on the nature of comitative constructions in Slavic languages. It has long been an assumption that the construction is best analyzed through two structurally distinct representations: Noun modification by a comitative prepositional phrase and verb modification by a comitative prepositional phrase. Recently there have been challenges to this predominant view, supplanting it with an analysis in which the putatively separate constructions are in fact different versions of the same construction. This paper supports and modifies the latter view.

### **1 The Basics**

There are two very similar looking constructions in Slavic. In example (1) (from Feldman, 2001) is what is traditionally considered comitative VP-adjunction. This construction is distinguished by the singular agreement on the verb.

- (1) Maša s Dašei hodit v školu.  
Masha with Dasha go<sub>SG</sub> to school  
'Masha goes to school with Dasha.'

In (2) we find what is traditionally dubbed comitative coordination. The comitative phrase is analyzed as being attached to the subject to the exclusion of the verb and the construction is distinguished by plural agreement on the verb.

- (2) Maša s Dašei hodjat v školu.  
 Masha with Dasha go<sub>PL</sub> to school  
 ‘Masha and Dasha go to school.’

In this paper I differ with this view and support one in which the above constructions are essentially the same construction.

The most obvious hurdle to this approach lies in the fact that the two types of comitative phrase exhibit quite different behaviors. Below, I note a few of the standard differences between these to otherwise similar types of comitatives (examples again taken from Feldman 2001).

With singular agreement, it is possible to wh-extract from a comitative but not otherwise. With plural agreement neither component of the comitative can be wh-extracted.

- (3) S kem Maša poshla/\*pošli v kino?  
 with whom Masha went<sub>SG</sub>/went<sub>PL</sub> to movie  
 ‘With whom did Masha go to the movies?’

Furthermore, it is only with plural agreement that reciprocal binding can be licensed, not comitative VP-adjunction (singular agreement).

- (4) Maša s Dašei ljubyat/\*ljubit drug druga.  
 Masha with Dasha like<sub>PL</sub>/like<sub>PL</sub> each other  
 ‘Masha and Dasha like each other.’

## 2 Previous Analyses

Given these and other differences many have argued that plural agreement examples function more like coordination while the singular agreement examples involve adjunction of a PP to the VP (See, among others, Dyla 1988, Dyla and Feldman 2008, Feldman 2003, McNally 1993, Vassilieva 2000, Vassilieva and Larson 2001). The differences between the types of comitatives are roughly schematized in (5) and (6) below. The structure in (5) represents the singular agreement, comitative VP-adjunction while (6) represents the plural agreement, comitative coordination.

- (5) Maša [<sub>VP</sub> s Dašei [<sub>VP</sub> hodit v školu] ].

(6) [DP [DP Maša] s Dašei] hodjat v školu.

The representations above straightforwardly account for the distinctions shown in the previous section. The representation in (5) functions akin to any other coordinated subject and as such is predicted to license plural agreement, reciprocal binding, and adjunct control. The representation in (6) also more or less straightforwardly accounts for the singular agreement facts: There is only one, singular subject and as such we predict only singular agreement on the verb and only the nominative noun c-command into the verb and can control anaphora.

Ionin and Matushansky (2002) offer an argument against the two-part analyses comes from the fact that the comitative phrase does not necessarily need to be associated with the subject. In their examples, the comitative phrase is shown to be associated with direct objects, indirect objects, (and possessives).

(7) Ya priglasila Ceciliju s Annabelloj.

I invited.sg Cecilia with Annabella

‘I invited Cecilia and Annabella’

(8) Korol' otдал korolevstvo princu s Zoluškoj.

king gave kingdom prince with Cinderella

‘The king gave the kingdom to the prince and Cinderella.’

If comitative phrases are to be adjoined to the VP when associated with the subject of the sentence, there needs to be a theory as to the particular site of this adjunction that prohibits the association with any other argument. There is no such theory of differential VP-adjunction, and in turn little reason to posit VP-adjunction.<sup>1</sup>

Instead, Ionin and Matushansky propose a collapse of the two types of comitatives into a single type. The comitative prepositional phrase always adjoins to the host DP. The different properties of comitatives

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<sup>1</sup> Even if there were such a theory, this approach raises a theoretical issue that is addressed in this paper. The solution to the theoretical problem allows for the effects of the two attachment site theory to be derived without recourse to two attachment sites.

arise depending on whether the host DP moves to [spec, TP] to the exclusion of the comitative or with it.

In other words, in lieu of the two representations in (5) and (6), we have instead two derivational histories of the same base-generated representation. The analogues of (5) and (6) are shown below as (9) and (10) respectively.

(9) [<sub>TP</sub> [<sub>DP</sub> Maša]<sub>i</sub> [<sub>VP</sub> [<sub>DP</sub> t<sub>i</sub> [ s Daše*i*]] [hodit v školu] ] ]

(10) [<sub>TP</sub> [<sub>DP</sub> [<sub>DP</sub> Maša] s Daše*i*] ]<sub>i</sub> [<sub>VP</sub> t<sub>i</sub> hodjat v školu] ]

This approach gets Ionin and Matushansky the above facts in a much more parsimonious manner. They claim, quite intuitively, that agreement and reciprocal binding takes place from the [spec, TP] position. If the entirety of the complex subject comitative phrase moves to that position (as in (10)) then we can expect plural agreement and licensing of reciprocals. If however only the adjoined-to DP moves to that position we only expect it to play a role in agreement and anaphora binding. These facts in turn are correctly predicted to correlate with the extraction facts.

In the following section I modify their analysis in the face of a few problems.

### 3 Problems

In this section I present theoretical and empirical arguments in doing so, but it must be stressed that independent of whether the above approaches could somehow remedy their empirical problems, the theoretical problem forces us to reconsider the above approaches entirely.

Though I go through a few telling theoretical and empirical difficulties that the previous analyses succumb to, I focus on Ionin and Matushansky's approach. This is not because it fails more egregiously. Quite the opposite, I believe that their arguments against the two-part approach are sound and as such I spend less time investigating its further inadequacies. I agree in spirit with Ionin and Matushansky's approach, but as well shall see, disagree with the details.

### 3.1 Theoretical Problem

In (11) we see the analysis that Ionin and Matushansky offer for comitatives:

(11) [<sub>VP</sub> [<sub>DP</sub> [<sub>DP</sub> Maša] [s Daše*i*] ] [hodit v školu] ]

The problem with the above representations is that adjunction like that to the DP in (11) is no longer possible in Bare Phrase Structure (Chomsky, 1995). In BPS, X' terms are relative and not independent entities in the theory. As such (since there is only one projection of a head that does not project further), there can only be one maximal projection per head. In other words, we are required by BPS to portray the above structures like their analogues below.<sup>2</sup>

(12) [<sub>VP</sub> [<sub>DP</sub> [<sub>D</sub> Maša] [s Daše*i*] ] [hodit v školu] ]

Here there is never more than one maximal projection per head. In short, there were two DPs dominating Masha in (11), but only one in (12). This slight difference will turn out to be pivotal.

This new approach to phrase structure creates problems generally for adjunction. It is generally taken that intermediate nodes are not targetable syntactically, in the BPS structure below, the intermediate, non-maximal V can be targeted for deletion.<sup>3</sup>

(13) [<sub>V</sub> [<sub>V</sub> [<sub>V</sub> ate] apples] in Fall]

In (14a) below, there are two relevant V projections: an outer, maximal VP and an embedded, non-maximal V. We can of course target the topmost VP in a sentence like in (14b). What BPS, as presented here does not predict is that we are able to target a non-maximal V projection for deletion like in (14c).

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<sup>2</sup> In BPS, nodes labeled, for example, `vP' are non-entities. I employ them here simply to draw attention to them as maximal projections. Sticklers can try to imagine them without the affixed 'P'.

<sup>3</sup> Chomsky's precise formulation of the nodes produced via adjunction differs from this, though see Hornstein, 2008 for argument against this formulation.

- (14) a. Ivan [<sub>VP</sub> [<sub>V</sub> ate apples]<sub>i</sub> in Fall]<sub>j</sub>  
 b. ...and Ivy [did]<sub>j</sub> too.  
 c. ...and Ivy [did]<sub>i</sub> in Spring.

Given BPS, neither of the approaches discussed in the previous section can work straightforwardly. For the traditional analyses, Ionin and Matushansky have shown that comitatives do not adjoin to VPs and we are left with a structure like in (12).

However, a structure like (12), essentially though forced upon us by BPS, is not adequate for the unified analysis. In (12) there is no maximal projection dominating Masha to the exclusion of the comitative phrase. As such, it alone cannot be targeted for the movement necessary to distinguish the two types of comitatives. It is non-maximal and is not able to move as a phrase.

- (17) [<sub>TP</sub> [<sub>D</sub> Maša]<sub>i</sub> [<sub>VP</sub> [<sub>DP</sub> t s Daše]<sub>i</sub> [hodit v školu] ] ]

In sum, the traditional analysis cannot principally maintain the dependence on VP-adjunction and the unified analysis cannot maintain the dependence on DP-adjunction. In the following section I present empirical arguments concerning the inadequacies of the analyses in question.

### 3.2 Empirical problems

Again here I focus on the short-comings of the Ionin and Matushansky approach. Of the two arguments I present, the first solely concerns their approach. The second problem applies to all approaches to Slavic comitatives.

#### 3.2.1 Three participants

One significant empirical problem with Ionin and Matushansky's approach is that for plural agreement, they require the entirety of the DP to move to [spec, TP]. This, they say, correlates with particular interpretation of the sub-parts of the DP. In (2) Masha and Dasha are interpreted as "equal participants" in whatever event is in question.

They stipulate that to be interpreted as unequal participants, it would be necessary for only Masha to move to the [spec, TP] position, leaving with Dasha behind. In Ionin and Matushansky's words: the with-phrase

must be stranded or extraposed if its informational status is different from that of its associate.

There are however cases in which plural agreement is accompanied by unequal participation. For example, the sentence below in Next has three participants in a flying event: The sorcerer, the hero, and Ivan.

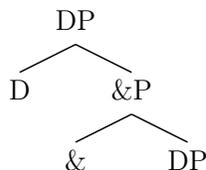
- (18) *Koldun s Ivanom s bogatyrem leteli po nebu.*  
 sorcerer with Ivan with hero flew<sub>PL</sub> across sky  
 ‘The sorcerer and Ivan with the hero flew across the sky.’

There is plural agreement on the verb, but not all of the participants are necessarily equal. This sentence can have the interpretation in which the sorcerer and Ivan are flying, but Ivan, not being magical, requires a hero to fly.<sup>4</sup> As Ionin and Matushansky state, to not be interpreted as equal, a participant must be stranded or extraposed. There is no evidence that *s bogatyrem* has been extraposed, so it should be taken as stranded. Given their structural analysis of comitatives, this is not possible. The string *koldun s Ivanom* is not a constituent in any sense and thus cannot be raised to [spec, TP] to the exclusion of *s bogatyrem*.

### 3.2.2 Structural Differences from Traditional Coordination

Though the interpretation of some comitatives is essentially indistinguishable from the interpretation of coordination, there are clear syntactic differences between them. Previous accounts have focused on making the semantics of the two constructions quite similar but as yet do not account for some syntactic differences. Let us take a relatively anodyne interpretation of the structures of coordination and comitatives like in (19) and (20).<sup>5</sup>

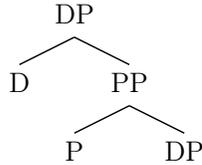
(19)



<sup>4</sup> It should be noted that not all speakers allow the relevant reading here.

<sup>5</sup> I assume Munn's (1993) approach to coordination.

(20)



The extent to which previous analyses make no structural distinctions between comitatives and coordination is the extent to which the following distinctions are problematic.

A clear comitatives and traditional coordination is found in the fact that only traditional coordination can bear so-called ‘flat’ readings. With multiple comitatives, the interpretation can only be of a nested sort. It is however possible in traditional coordination. That is, the sentence in (21) allows for a reading in which all three characters arrived together en masse or that Masha and Sasha arrived as a pair to the exclusion of Dasha (It is also possible to get the reading in which Dasha and Masha are the pair). In (22) only the reading in which there is a pair of people is possible; the en masse, undifferentiated arrival reading is not possible. The previous approaches fail to address this distinction.

(21) Daša i Maša i Saša  
 Dasha and Masha and Sasha  
 ‘Dasha and [Masha and Sasha]’ or ‘Dasha, Masha, and Sasha’

(22) Daša s Maše *i* s Saše *i*  
 Dasha with Masha with Sasha  
 ‘Dasha and [Masha with Sasha]’ but not ‘Dasha, Masha, and Sasha’

In sum, there are potential empirical problems with the previous accounts of Slavic comitatives. Further, the representations of comitatives present a serious theoretical problem. In the next section, I posit a solution to the theoretical problem.

#### 4. A new approach to adjunction

Hornstein (2008) proposes the decomposition of Merge into two sub-operations: Concatenate and Label. In (23) below the traditional

conception of Merge is presented. Next to that in (24) is Hornstein's decomposed merge.

(23) Merge(x,y)  $\rightarrow$  {x, {x,y}}

(24) a. Concatenate(x,y)  $\rightarrow$  {x,y}  
 b. Label(x, {x,y})  $\rightarrow$  {x, {x,y}}

The operation Concatenate makes a unit of the two elements and the operation Label causes one of the subunits to act as the label of the unit.

We can now account for the adjunction issues we saw above. When an adverb Concatenates with a verb and Labeling does not occur (25) the adverb is not affected by operations targeting the verb. VP ellipsis then does not delete the adverb, but rather strands it.

(25) Ivan ran slowly and Ivy did [ [VP run] quickly].

When an adverb is both Concatenated and Labeled into the structure (26), VP-deletion involves the adverb as well as part of the VP:

(26) Ivan ran slowly and Ivy did so [VP [V run] quickly] too.

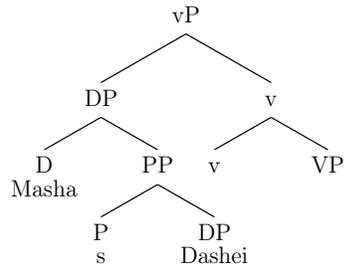
#### 4.1 Decomposed Comitatives

To counter the theoretical problems with comitatives noted above, we can employ Hornstein's re-interpretation of Merge. There will be an initial structural ambiguity between the comitative phrase being Concatenated and Labeled with the subject (27) and being merely Concatenated (28).<sup>6</sup>

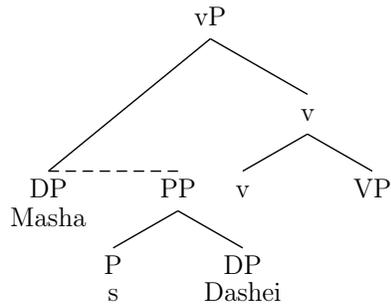
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<sup>6</sup> For ease of explication, I present Concatenation without Label with dashed lines. The PP is in a structural relation with the host DP but does not form a constituent with it.

(27)



(28)



It is now possible to move either the string *Masha s Dashei* to the [spec, TP] position or just *Masha* to the exclusion of *s Dashei*. When we want the whole phrase to move, we can target the Labeled DP in (27); when we want just the initial noun to move, we can target the merely Concatenated DP in (28). In the following section I show how this approach can better account for the empirical short-comings discussed earlier.

## 5. Empirical consequences

The most apparent empirical advantage to this view is that we can now target exactly what we could not with the Ionin and Matushansky approach. Recall that we wanted to be able to move the string *koldun s Ivanom* in (18). Under the new regime the lower comitative phrase does not need to be fully Merged into the structure, it can be merely concatenated. As such, when the highest DP is targeted to move to [spec,

TP], the Concatenated comitative does not move with it: exactly what we needed for the data presented earlier.

It was shown above that current theories of comitatives render them essentially the same as coordination, despite their differences. In this subsection I will explore a means to distinguish the two, relying heavily on the account of comitatives I propose here

Larson, 2010 argues that coordination is the result Concatenation of like categories. Labeling in these instances is optional and the phrase in (29) can be derived in two ways.

(29) Mary and Ivan and Ivy

For the flat reading of the phrase above ('Mary, Ivan, and Ivy'), we first concatenate Mary and Ivan (30), then Concatenate Ivy into that (31).

(30) Concatenate(Mary,Ivan)  $\rightarrow$  {Mary,Ivan}

(31) Concatenate({Mary,Ivan},Ivy)  $\rightarrow$  {Mary,Ivan,Ivy} = "Mary (and) Ivan and Ivy"

For the grouped reading, all that is required is that Labeling occurs after one of the instances of Concatenation:

(32) Concatenate(Mary,Ivan)  $\rightarrow$  {Mary,Ivan}

(33) Label(Mary,{Mary,Ivan})  $\rightarrow$  {Mary,{Mary,Ivan}}

(34) Concatenate({Mary,{Mary,Ivan}},Ivy)  $\rightarrow$  {Mary,{Mary,{Ivan,Ivy}}} = "Mary and Ivan and Ivy"

Comitatives are also structurally ambiguous. But they are not ambiguous between structured, hierarchical representations and flat, non-hierarchical ones; they always bear hierarchical interpretations. The difference in interpretation then is not going to reduce to cumulatively versus distributivity, but rather to 'and' readings and 'with' readings.

(35) [DP [<sub>PP</sub> P DP] ]

(36) [<sub>DP</sub> D [<sub>PP</sub> P DP] ]

The structure for the ‘and’ interpretation of comitatives (36) and that of the hierarchical coordination above is the same. Comitative coordination should thus be interpreted only in ways that hierarchical coordination can be. When comitative PPs are stacked, they necessarily introduce nested structure and in turn disallow flat readings.

Additionally, this approach can handle a distinction in ambiguity between traditional coordination and the comitative version. As discussed above, I posit two ways to derive coordination: one that results in a distributive reading, and one that results in a collective reading. This matches up nicely with the ambiguity the McNally (1993) raises with respect to coordination in Slavic.

In (37) below, the sentence can have either a collective reading in which a total of 1000 rubles were won by the group of Anna and Masha or the reading in which both women won 1000 rubles each.

(37) Anna i Maša vyigrali 1000 rublej.  
 Anna and Masha won<sub>PL</sub> 1000 rubles  
 ‘Anna and Masha won 1000 rubles in total.’ or ‘Anna won 1000 rubles and Masha won 1000 rubles.’

Comitative coordination is however *not* ambiguous in this way. As seen below, comitative coordination only bears the collective reading. More structure is required and the collective reading is precluded.

(40) Anna s Maše*í* vyigrali 1000 rublej.  
 Anna with Masha won<sub>PL</sub> 1000 rubles  
 ‘Anna and Masha won 1000 rubles in total.’ but not ‘Anna won 1000 rubles and Masha won 1000 rubles.’

## 8. Conclusion

In this paper I have argued for a decomposed Merge analysis of comitatives in Slavic on theoretical grounds. It also provides a fuller account of the empirical terrain. It was argued that while the approach of Ionin and Matushansky is superior to traditional analyses, it undergenerates in a few crucial areas. I have offered a modification that

more thoroughly explains the subtle differences between coordination and comitatives within a theory of decomposed Merge.

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## Anticausatives and Unaccusatives in Czech

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### 1. Outline<sup>1</sup>

In the recent literature on the argument structure, discussions concerning the relation between a causative and an anticausative play an important role. In particular, researchers argue for either universal causativization (the direction of derivation is unacc → caus) or universal anticausativization (caus → unacc). I contribute to the enterprise by discussing the Czech anticausatives with *se* in comparison both to the causatives they are linked to and to the simple unaccusatives. The paradigm to be discussed is shown in (1).

- |                     |  |
|---------------------|--|
| (1) a. simple unacc | Prádlo sch-(NU)-l-o.<br>laundry dry- <i>NOU-L-N.SG</i><br>'The laundry dried.'             |
| b. causative        | Karel suš-i-l-Ø prádlo.<br>Karel dry- <i>I-L-M.SG</i> laundry<br>'Karel died the laundry.' |

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1 I am indebted to the audiences of FDSL 8.5 in Brno and FASL 20 at MIT for their comments. In particular, I want to thank Tarald Taraldsen for discussion and an anonymous reviewer for insightful comments.

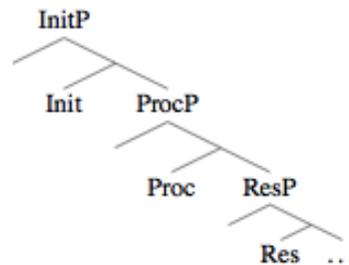
2 I use the traditional classification system rather than Townsend's one-stem verb system, Townsend (2000), except that – in line with Townsend and somewhat extending the traditional classification – I want to keep the distinction between thematic *-E-* and (Townsend's) *-EJ-*, cf. distinction between verbs like *hoř-e-t* 'burn' on the one hand and *sáz-e-t* 'plant' on the other. While in the infinitive form both the thematic suffixes appear

- c. anticausative      Prádlo se suš-i-l-o.  
 laundry *se* dry-*I-L-N.SG*  
 ‘The laundry dried.’

Based on the Czech data, I argue for a world in which simple unaccusatives are created by the root in combination with a particular theme; anticausatives with *se* are more complex structures derived from the causatives. For anticausatives, then, it follows that their structures include an external argument (EA), which I take to be identified with the internal argument (IA) in a way leading to a partial unification with regular reflexives. I discuss briefly the nature of the EA in anticausatives in the light of the recent discussions, such as Alexiadou *et al.* (2006), Alexiadou (2010), Wood (to appear) and Horvath & Siloni (2011).

My argumentation is casted within a decompositional analysis of verbs akin to the one proposed by Ramchand (2008) or Alexiadou *et al.* (2006) and as exemplified in (2) from Ramchand.

(2)



A verbal event is divided into subevents, these semantic parts have their own syntactic realization. So, the lowest subevent (represented as Resultant Phrase in (2)) denotes the state to which the verb leads, the ProcP (Process Phrase) is the core verbal projection and InitP (Initial Phrase) introduces an external argument.

The article is organized as follows. Looking at the combinations of verbal roots with the thematic vowels I argue that they together determine the argument structure of the verb (section 2) and the argument structure is then mapped into the syntactic structure similar to Ramchand's (2), in section 3. In section 4, I present the derivation of

anticausatives and the paper concludes by section 5, the discussion of the expected differences between unaccusatives and anticausatives.

## 2 Verbal types

There are 6 different (infinitival) thematic suffixes in Czech, Šlosar (1995)<sup>2</sup>. Historically – and to a great extent even in present-day Czech, as argued here – these thematic suffixes brought about a certain meaning, as illustrated in the example (3). The same root *sed* ‘sit’ (except (3f)<sup>3</sup>) is combined with the different thematic suffixes; the meaning difference in the resulting infinitives indicates that the meaning comes from the thematic suffix.

(3) a. <i>stative</i>	<i>sed-ě-t</i> ‘to sit’	d. <i>rep./habitual</i>	<i>sed-a-t</i> ‘to sit’
b. <i>semelfactive</i>	<i>sed-nou-t (si)</i> ‘to sit down’	e. <i>rep./hab.</i>	<i>pře-saz-ova-t</i> ‘to make <i>sb.</i> sit’
c. <i>causative</i>	<i>po-sad-i-t</i> ‘to make <i>sb.</i> sit’	f. <i>eventive</i>	<i>nés-Ø-t</i> ‘to carry’

2 I use the traditional classification system rather than Townsend’s one-stem verb system, Townsend (2000), except that – in line with Townsend and somewhat extending the traditional classification – I want to keep the distinction between thematic *-E-* and (Townsend’s) *-EJ-*, cf. distinction between verbs like *hoř-e-t* ‘burn’ on the one hand and *sáz-e-t* ‘plant’ on the other. While in the infinitive form both the thematic suffixes appear as *-E-*, only the former is an instantiation of the original stative theme *-E-* (discussed throughout this paper, section 4.1. in particular), while the latter has the extended (and historically much later) theme *-EJ-*, as witnessed by the imperatives, cf. *hoř-Ø!* ‘burn!’ vs. *sáz-EJ!* ‘plant!’

3 The expected form is *sed-Ø-t*, inexistent in contemporary (and even in earlier stages) Czech, the stative event being expressed by *sed-ě-t* in (3a). The expected form is however found in Russian: *ses-Ø-t* ‘to sit’. A reviewer wonders whether the roots are really as closely related as I claim. It is at least rather standardly assumed in historical Slavic linguistics; the roots in (1) are examples of various ablaut-grades. For instance, the root in (3c-e) is an (long) o-ablaut grade, as opposed to (3a-b) that has an (long) e-grade ablaut, cf. Townsend & Janda (1996), p.112. This, still, raises the following issue: I claim that it is the thematic vowel that is solely responsible for the nature of the verbal alternations, but it is a simplification. As a matter of fact – and as hinted at by the root-alternations discussed above – the roots play an important role in deciding the verb’s thematic nature. This is not a platform to discuss this issue in detail, but I pay attention to this issue in the upcoming research.

In this work, I am concerned only with the thematic suffixes shown in (3a-c), as their meaning contribution is relatively clear and relatively easily discernible<sup>4</sup>. I show that the thematic suffixes *-E-* and *-NOU-* derive unaccusatives while the thematic suffix *-I-* derives transitive verbs.

From this perspective, then, looking back at the examples in (1), the forms are based on the same root<sup>5</sup>, but with different thematic suffixes: *-NOU-* for simple unaccusative, *-I-* for both the causative and anticausative variant. I set to show first, that the thematic suffixes *-E-* and *-NOU-* introduce relatively small amount of functional structure above the root resulting thus in an unaccusative structure. The thematic suffix *-I-*, on the other hand, necessarily introduces a larger amount of functional structure including an external argument.

### 3 The sizes of verbal projections

Let us start with very small verbal structures, that is, with a relatively small amount of the functional heads above the verbal root. The crucial property of such structures is that they create adjectives on the *L*-participle. Once a certain amount of structure is exceeded, the participle for creating the verbal adjective changes to *N/T*-participle. Let us start with the small structures. Such are introduced by the thematic suffixes *-E-*, *-NOU-* or *-Ø-*.

#### 3.1. *E*-verbs

Verbs with the thematic vowel *-E-* include verbs of decay, uncontrollable growth and such with a rather clear unaccusative ring to their semantic content; an example of such is in (4a). All the verbs in this class have the

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4 Needless to say, to support my claims, all the thematic suffixes should be considered; I leave that to future research. For a partially extended discussion on the same pattern, see Medová (2012). Notice, finally, that this type of research – necessarily, in my view – is concerned with *tendencies*, there certainly are exceptions to the patterns I describe, in any Slavic language. However, I still strongly believe that the patterns are real and that the counterexamples should be treated as exceptions; most likely there is a phonological explanation for the counterexample.

5 The relation is muddled by historical development, but the basic root is *such*, as in the adjective *such-ý* 'dry', in the causative form, the final velar /x/ (*ch* in the Czech orthography) has been palatalized to *-š*, and the vowel *-u-* from the unaccusative version was lost as a consequence of adding the theme *-NOU*.

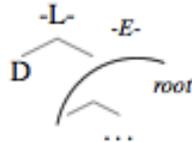
adjective based on the *L*-participle, adjectives based on *N/T*-participle are ungrammatical, similar to (4b).

- (4) a. Jabloň            za-krn-ě-l-a.  
 apple.tree<sub>F.SG</sub>    za-atrophy-*E-L*-<sub>F.SG</sub>  
 ‘The apple tree atrophied.’
- b. za-krn-ě-l-á            / \*za-krn-ě-n/t-á            jabloň  
 za-atrophy-*E-L*-<sub>F.SG.LF</sub> / za-atrophy-*E-N/T*-<sub>F.SG.LF</sub>    apple.tree  
 ‘atrophied apple tree’

I take the ability to form adjectives based on the *L*-participle as a hallmark of the unaccusativity of the verb they derive from.

Going back to the verbal decomposition in (2), it is important to notice that different arguments are introduced at different levels of structure. For unaccusatives it entails that the projection of verbal structure must stop before reaching the level where external arguments (EA) are introduced. Let us look at the first possible stopping point: (5) is meant to convey the claim that when the projection stops at *D*, the heads between *D* and the root are lexicalized jointly by the thematic suffix *-E-* and that *-L-* is added on top when the projection stops at *D*.

(5)



In this case, the heads (up to) *D* are spelled out by the thematic suffix *-E-*. There is, however, yet another option how these heads (representing functional sequence) can be lexicalized: by the root itself. This is an option with the *-NOU-* unaccusatives and I discuss it briefly in the following section.

### 3.2. *-NOU-*verbs

The thematic suffix *-NOU-* is associated with two rather distinct verb classes: with some verbal roots, it creates semelfactives, as shown in (3b), with other roots; it gives rise to degree achievements, as shown in

(1a). Only the latter class is of interest here; these verbs clearly create the *-L-* based adjectives, as shown for a few in (6) in the second column. Contrary to the *-E-* verbs discussed in the previous section, the *-NOU-* degree achievements have transitive counterparts (with the thematic suffix *-I-*), as indicated in the third column in (6): these alternations are thus the instantiations of the unaccusative – causative alternation discussed in previous sections. Notice that the last column in (6) gives only the basic (very often adjectival) meaning of the root: the meaning of the *-NOU-* verb as well as of the *-I-* verb is predictable (hence, transparent), by now.

(6) a.	z-mrz-nou-t	z-mrz-l-ý	z-mraz-i-t	<i>freeze</i>
b.	u-sch-nou-t	u-sch-l-ý	u-suš-i-t	<i>dry</i>
c.	ze-sláb-nou-t	ze-sláb-l-ý	o-slab-i-t	<i>weak</i>
d.	o-slep-nou-t	o-slep-l-ý	o-slep-i-t	<i>blind</i>

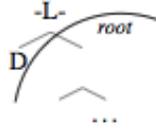
Although I claim that the thematic suffix *-NOU-* forms unaccusatives, notice that the thematic suffix *-NOU-* is present only in the infinitival form (cf. the first column in (6)), it is not present in the *-L-* based adjective, as indicated in the second column in (6), nor is it a part of a past tense form based on the *-L-* participle. The pattern is virtually the same for some verbs with *-Ø-* thematic suffix<sup>6</sup>, as shown in (7).

(7) a.	vz-plá-Ø-t	b. Sanitka	vz-plá-Ø-l-a.
	vz-ignite-Ø-INF		ambulance <sub>F.SG</sub> vz-ignite-Ø-L-F.SG
	‘to ignite’		‘The ambulance car ignited.’

Given that the *-L-* based adjectives are well-formed, I assume that the *-NOU-* and *-Ø-* verbs are unaccusatives, and that their structure thus corresponds in size with the structure of the *-E-* unaccusatives in (5) modulo my assumption that if the thematic suffix *-NOU-* is not pronounced in the relevant form, it is not there. Hence, for the *-NOU-* and *-Ø-* verbs I propose the structure in (8). The assumed unaccusative structure is lexicalized by the root itself.

<sup>6</sup> I am aware of the fact that not all the *-Ø-* theme verbs are unaccusative. Further investigation is called for.

(8)



Stopping the projection at any point higher than D – but still short of reaching the maximum height – leads to *-N/T-* replacing *-L-*. If the structure grows 'one level up', we all of a sudden get structures based on the *N/T-* participles. Hence, next discussion is directed to various passives.

### 3.3. Passives

Looking at a transitive verb (9a), there are two passives related to it. First, an adjectival passive, that essentially asserts only a state to which the event expressed by the verbal event leads, Kratzer (2000). For the case at hand, *Karel's* initiative leads to a process that ended up with a state of a *frozen codfish*. This state is shown in (9b).

- (9) a. Karel z-mraz-i-l-Ø tresku.  
 Karel<sub>M.SG</sub> z-freeze-*I-L-*<sub>M.SG</sub> codfish  
 'Karel froze the codfish.'
- b. (Podívej,) ta treska je z-mraž-e-n-á!  
 look this codfish<sub>F.SG</sub> is z-freeze-*E-N/T-*<sub>F.SG.LF</sub>  
 'Look, the codfish is frozen!'

Notice the way I parse (9b): I claim that the *-E-* is a thematic vowel opposing really everybody else, both the structuralist Czech tradition (Šmilauer (1972), Komárek et al. (1986), Karlík et al. (1995)) as well as the American Slavicist tradition (cf. Townsend (2000)). Everybody takes the *-E-* in *z-mraž-E-n-á* as an epenthetic vowel. In this view, then, there are thus two allomorphs for the *-N-* version of the *-N/T-* participle: simple *-N-* that appears with thematic suffixes as *-A-* or *-OVA-* and *-EN-* with *-I-* themes<sup>7</sup>.

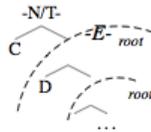
<sup>7</sup> The *-EN-* allomorph appears also with *-Ø-* thematic suffixes, cf. (i) and (ii). There are, however, problems for extending the claim there.

(i) nés-Ø-t	(ii) nes-Ø-EN-a	(iii) nes-E-N-a
'carryINF'	'carriedF.SG'	'carriedF.SG'

Looking at things the traditional way means that with the *-I-* verbs, the thematic suffix mysteriously disappears in the *-N/T-* participle (and all the forms derived from it) – contrary to all the other thematic suffixes, which are kept in the *-N/T-* participles (but see the preliminary comments on *-Ø-* thematic suffix in Medová (2012), fn. 13).

I, contrary to everybody else, take the *-E-* in (9b) to be a thematic suffix: the very same stative thematic suffix discussed in section 3.1. In other words, the thematic suffix *-I-* is not lost in the *-N/T-* participles, but (for reasons discussed in section 3.5.) it cannot surface as expected, cf. as *-I-*, but it is lexicalized by *-E-* instead. The proposed structure is then (10).

(10)



The thematic suffix *-E-* spells out all the heads from C down to the root. However, the same adjectival participle can spell-out even a bigger structure: eventive passive. Eventive passive must be bigger than the adjectival passives discussed so far: it must be bigger (which translates to the fact that the projection must reach the head *B*), since eventive passives include external arguments (EA), expressed as a *by*-phrase *Karlem* in (11). Notice, that such an adjunct is clearly impossible with the adjectival passive in (9b)<sup>8</sup>.

- (11) *Treska byla z-mraž-e-n-a Karlem.*  
 codfish<sub>F.SG</sub> was z-freeze-E-N<sub>F.SG</sub> Karel<sub>INS</sub>  
 ‘The codfish was frozen by Karel.’

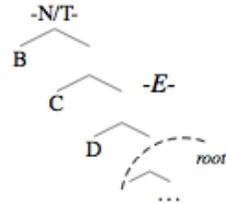
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Similarly, as pointed out by the anonymous reviewer, it would be problematic to extend the present idea to Russian where the *-E-* in *-EN-* shifts to *-O-* under stress and the *-E-* in *-EN-* does not cause palatalization on the preceding consonant – while the thematic suffix *-E-* does. Clearly, more needs to be said for both issues.

<sup>8</sup> Morphologically, the adjectival passive is expressed by a long form *zmražen-á* while the eventive passive has a so-called short form *zmražen-a*. In Colloquial Czech, the prescribed short form of an eventive passive tends to be replaced by a long form; however, still, the option to express an external argument is available only to eventive passives.

For the structure of the eventive passive, (by now) the thematic suffix *-E-* is able to span all the heads from *B* down to the root, as shown in (12).

(12)

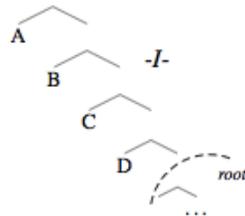


If the structure becomes any bigger than this, I argue that then the thematic suffix *-E-* is too small to spell-out the relevant functional sequence – and the thematic suffix *-I-* appears instead.

#### 3.4. Active forms

The thematic suffix *-I-* appears only in active transitive structures (9a), that is, when the projection goes all the way to the top. Then *-I-* will lexicalize all the heads down to the root blocking *-E-* and *-NOU-*, as (13) indicates.

(13)



In (13), there are two heads that introduce the external argument: *B* and *A*. However, *B* is only able to license the external argument as an adjunct, not as an argument. See discussion in section 5.

In this section, I proposed a compositional analysis of the three thematic suffixes in terms of the sizes of functional structure they are able to spell-out. This analysis has the advantage of offering a syntactic

account of the alternations between thematic *-I-* and *-E-* across the active and passive forms<sup>9</sup>.

#### 4. Anticausatives: I+se

I established that the active forms with the thematic suffix *-I-* have the external argument introduced by the head *A*. But by the same token, anticausatives with *se* based on *-I-* verbs must now have an external argument, since *-I-* only appears when the projection reaches the level where the external argument is introduced. But if so, then anticausatives cannot be unaccusative. The question then is: where is the external argument in anticausatives like (14)?

- |   |   |
|---|---|
| (14) <i>Větev</i> <i>se zlom-i-l-a.</i><br>branch <sub>N.F.SG</sub> <i>se z-break-I-L-F.SG</i><br>‘The branch broke.’ | (15) <i>Karel</i> <i>se o-hol-i-l-Ø.</i><br>Karel <sub>N.M.SG</sub> <i>se o-shave-I-L-M.SG</i><br>‘Karel shaved.’ |
|---|---|

I claim that the subject *větev* in (14) is both the external as well as the internal argument assimilating the analysis to the account of reflexives, as (15) – in line with Chierchia (2004) and Medová (2009). Chierchia (2004: 42) seems to attribute the distinction between anticausatives (20) and reflexives (21) to animacy. So, while *Karel* in (21) is animate and hence can be interpreted as an intentional agent, *větev* in (20) is inanimate, hence cannot act intentionally. However, animacy must be divorced from intentionality: animacy does not necessarily entail intentionality, as shown for Norwegian *get*-passives by Taraldsen (2010) and for Czech *have*-passives by Medová & Taraldsen (to appear).

As a potential way out of this dilemma, I suggest to generalize the pattern found in Salish. Salish languages, apparently, make an overt (cf.

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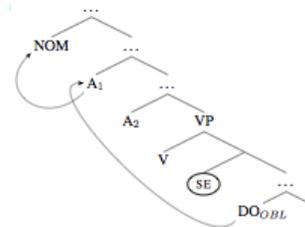
<sup>9</sup> However, this analysis runs into a different problem known as the *ABA* pattern problem (Bobaljik 2007). Bobaljik observed that crosslinguistically, there is a contingency in the structures that are built successively and compositionally. So, superlatives are (morphologically) built on comparatives, not on positives. To interpret this observation in a way more apt for the case at hand, the biggest structure is built upon the intermediate-sized one, not on the smallest. In this respect, the pattern here goes wrong: for the smallest (unaccusative) structure, we have *-L-*, for the intermediate, we have *-N/T-*. Hence, for the largest structure, we expect *-N/T-* again: but the largest (active) structures are built on *-L-*. Moreover, the intermediate-sized structures have *-L-* as well: every Slavic verb has an *L*-based participle. I leave it for further research.

morphologically marked) distinction between different types of external arguments, Davis (2000). One type of external argument, namely [+HUM], can (and must) be introduced by a special transitivizer DIR(ective), as shown in (16a). If the introduced type of the external argument is not [+HUM], the structure with directive is ungrammatical, (16b). On the other hand, CAUS(ative) transitivizer is indifferent to the type of the external argument it introduces, hence grammatical (16c).

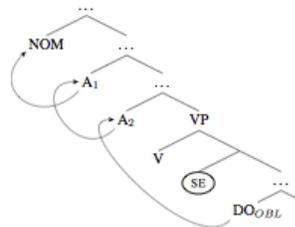
- (16) a. k'áx-an'-aš    □i-ščúq<sup>w</sup> az'-a    k<sup>w</sup>-š-Bucky  
 dry-DIR-ERG PL.DET-fish-EXIST DET-NOM-Bucky  
 'Bucky dried the fish.'
- b. \*k'áx-an'-aš    □i-ščúq<sup>w</sup> az'-a    ti-šk'ěxəm-a  
 dry-DIR-ERG PL.DET-fish-EXIST DET-wind-EXIST  
*Int*: 'The wind dried the fish.'
- c. k'áx-š-aš    □i-ščúq<sup>w</sup> az'-a    ti-šk'ěxəm-a  
 dry-CASU-ERG PL.DET-fish-EXIST DET-wind-EXIST  
 'The wind dried the fish.' (St'át'imcets, Davis (2000):51(63))

I essentially propose to assume the same distinction in Czech (universally, really) as well, even though not overtly morphologically marked. The trees in (17) then show the idea at work: A<sub>1</sub> corresponds to the Causer, A<sub>2</sub> to the Directive.

(17) a.



b.



I adopt Taraldsen's (2010) proposal, according to which the intentionality (certainly found with reflexives (14) and certainly lacking with anticausatives (15)) is keyed to the amount of the functional structure lexicalized by the NOM argument. Concretely, for the anticausative (17a), the NOM argument *větev* raised to NOM via only the

Causer ( $A_1$ ), while for the reflexive (17b), *Karel* raised via both the Directive and the Causer head. This, in Taraldsen's (2010) framework, amounts to the intentionality (witnessed by agentive adverbial modifiers, for instance) of reflexives. Since the NOM argument in anticausatives does not rise via the Directive, no agent-oriented adverbials are expected<sup>10</sup>.

Summarizing, then: I proposed derivations in which the (simple) unaccusatives in Czech have a structure without an external argument or a causer-like element, while anticausatives, on the other hand, do include in their structures a causer-like element. The natural question is whether such a structural distinction is detectable by syntactic tests. The answers will be sought in the final section.

### 5. Unaccusative and Anticausative differ. Or do they?

I thus argue that there is an external argument with anticausatives with *se*. This proposal, even though from a rather different perspective, is relatively akin to Alexiadou et al. (2006), Alexiadou (2010), Schäfer (2008) and Wood (to appear): the morphologically marked anticausatives have a causer-like external argument. In these works, the Voice projection requires to be phi-complete, hence a specifier of the Voice is projected. However, since the Spec, VoiceP is a canonical position for the EA, the additional morphology (-*st* in Icelandic, non-active morphology in Greek, and I presume *se* in Czech) is merged in that position. It is further assumed that this element is not a semantic modifier of the causing event (Wood (to appear)). The unmarked unaccusatives, on the other hand, divide the researchers into those, who claim that they do not have any Voice projection at all (Alexiadou (2010) and others, as Wood (to appear), for whom even in the unmarked unaccusatives there is a defective projection of Voice, with no Specifier and with zero semantics. All in all, according to these approaches, we do expect to see

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10 In the derivations, I assume Medová's (2009) derivation of reflexives and anticausatives. The role of *se* is essentially the same both in reflexives and anticausatives, in both cases it is a certain part of the direct object functional sequence, details aside. The anonymous reviewers points out a minimality violation in (17a): the DO 'skips' a viable landing site  $A_2$  and it goes to  $A_1$ . There are various ways to avoid such violation, most of them, I admit, are technical and do not – in my view – address the problem properly. I leave it aside here.

a syntactic difference between a simple unaccusative and an anticausative.

There are two tests classically used to detect the presence of a causer-like argument in the structure: the causal adjuncts and *by-itself* modification. The causal adjunct is shown in (18) both for the simple unaccusatives and anticausatives. If anticausatives indeed have a causer-like element in their structures, then this element should be detectable by the causer modification; simple unaccusatives, on the other hand, lack any such projection, hence, the causal modification should not be available. Notice that – contrary to the expectation brought by my analysis – the causal modification is available for both structures.

- (18) a. Tylle kytky z toho horka z-vad-Ø-l-y.  
 these flowers<sub>F.PL</sub> from this heat z-wilt-NOU-L-F.PL  
 These flowers wilted from the heat.
- b. Telefon se z toho horka vy-p-nu-l-Ø.  
 telephone<sub>M.SG</sub> se from this heat vy-turn.off-NOU-L-M.SG  
 The telephone turned off from the heat.

Similarly for the *by-itself* modification: the causer-like element in anticausatives should license the reflexive-like modification, the simple unaccusatives should not have it. The actual facts are shown in (19): *by-itself* modification is, again, available both for the anticausatives (19b), but also, unexpectedly, for simple unaccusative in (19a), examples from Google.

- (19) a. Zaparkovaná sanitka vz-plá-Ø-l-a sama od sebe.  
 parked ambulance.car<sub>F.SG</sub> vz-ignite-Ø-L-F.SG alone from self  
 The parked ambulance car ignited all by itself.
- b. Stává se, že se počítač sám od sebe vy-p-n-e.  
 happens se that se computer<sub>M.SG</sub> alone from self v y-turn.off-NOU-3.SG.M  
 ‘It sometimes happens that the computer restarts by itself.’

This is certainly a problematic state of affairs for the present analysis. However, as recently pointed out by Horvath & Siloni (2011), if the *by itself* modification is sensitive to causers, then we expect to find it also with other causers, cf. in (20) – yet, it does not seem to be the case.

- (20) Slunce vysušilo louže \*(samo od sebe).  
 sun dried.out puddles alone from self  
 ‘The sun dried the puddles \*by itself.’

Horvath & Siloni (2011) take the natural step given the status quo, namely that morphology does not reflect the corresponding syntactic variation. They show that Hebrew Anticausatives (derived by reflexive morphology) behave as Hungarian underived unaccusatives. Horvath & Siloni (2011) argue for a decausativization approach, according to which the cause-like theta-role has been eliminated from the anticausative altogether.

Alternatively, one might want to conclude – along with Chierchia's (2004), Demirdache (1997), Levin and Rappaport Hovav (1995), Pustejovsky (1995) and Reinhart (1997) – that unaccusatives have universally causative semantics at a certain level of representation.

It seems that the pressure of the evidence points toward either of these conclusions. Yet, the tests should be investigated further to ensure they really test for causative-like element and not something else. Ideally, other tests should be found in future research.

I showed that Czech has derivations leading to simple unaccusatives, derivations leading to causatives and from the causatives, anticausatives can be derived. In that sense, within the discussion of the universality of the causative vs. anticausative approach, I take the following stand: the amount and structure of the functional sequences determines whether the derivation ends up as unaccusative, causative or anticausative. In other words, the directionality applies only for anticausatives that certainly are derived from causatives; but the relation between unaccusatives and causatives is indirect via the amount of the functional heads extending the root.

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## **On the Decline of Tense and the Emergence of Second Position Pronominal Clitics\***

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This paper addresses a diachronic change in the pronominal clitic placement in Slavic. The change involves a shift from verb-adjacency to second position cliticisation in some languages and is accompanied by the loss of morphological tense distinctions, which I analyze as the loss of TP. The paper has the following organization. Section 1 outlines general properties of cliticization in Slavic. Section 2 presents the system of clitics in Old Church Slavonic and shows the way it was modified in Old Serbian. Section 3 describes the ways tense marking changed in Slavic over time. Section 4 links the impoverishment of tense distinctions to the emergence of second position pronominal cliticization. Section 5 provides a syntactic analysis of the observed changes.

### **1 Properties of clitics in Slavic**

Clitics in Slavic display the strict internal order given in (1).

- (1) operator clitics > AUX (except 3<sup>rd</sup> SG) > DAT > ACC > 3<sup>rd</sup>  
SG AUX (see Franks & King 2000: 45)

The sequence opens with operator clitics, which include elements such as the question particle *li*; next come the clitic forms of the auxiliary verb

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BE. The accusative clitic follows the dative clitic, and the whole sequence ends with the third person singular form of the auxiliary BE (subject to some variation).

Although the internal order of clitics is roughly the same in Slavic, a crucial distinction concerns the position of clitics in the clause structure. In Bulgarian and Macedonian, pronominal clitics are verb-adjacent, but they do not need to appear in any specific linear position (see 2a). In this way they follow the pattern of Old Church Slavonic cliticization (see section 2) In Serbo-Croatian, Slovene, Czech, and Slovak, clitics occur in second position, following the clause-initial syntactic constituent, by and large without any specific requirements about the categorial type of this constituent. They do not need to be verb-adjacent (see 2b).

- (2) a. Včera *mi go* dade Vera.  
 yesterday me<sub>DAT</sub> it<sub>ACC</sub> gave Vera  
 ‘Vera gave it to me yesterday.’  
 a'. \*Vera *mi go* včera dade. (Bg, Franks & King 2000: 63)  
 b. Marija *mi ga je* juče dala.  
 Marija me<sub>DAT</sub> it<sub>ACC</sub> is<sub>ACC</sub> gave  
 ‘Marija gave it to me yesterday.’ (SC, Tomić 1996: 820)

Importantly, these two cliticization types differ not only in the linear position of the clitics in the clause, but clearly display different syntactic operations related to the distinction of X<sup>0</sup> versus XP movement or the landing site in the structure, as will be illustrated with a few examples below.

Thus, Bošković (2001: 50) points out that in Serbo-Croatian clitics may be split from each other, for example by a parenthetical, as in (3a), or in VP-fronting, (see (4); as also observed by Čavar (1999)). In the latter case, the VP contains a pronominal clitic that is separated from the auxiliary clitic located outside the fronted VP. As shown in (3b and 4b), splitting is not an option in Bulgarian (see Bošković 2001: 189).

- (3) a. ?Oni *su, kao to sam vam* rekla, predstavili *se* Petru.  
 they are as am you<sub>DAT</sub> said introduced self<sub>ACC</sub> P<sub>DAT</sub>  
 ‘They, as I told you, introduced themselves to Petar.’ (SC)  
 b. \*Te *sa, kakto ti* kazah, predstavili *gi* na Petūr.  
 they are, as you told introduced them to Peter  
 ‘They have, as I told you, introduced them to Peter.’ (Bg)

- (4) a. [Dali *ga* Mariji] *su* Ivan i Stipe.  
gave it<sub>ACC</sub> Marija<sub>DAT</sub> are<sub>AUX</sub> Ivan and Stipe  
'Give it to Marija, Ivan and Stipe did.' (SC)
- b. \*[Celunala *go*] Maria *e*.  
kissed him Maria is<sub>AUX</sub>  
'Kissed him, Maria has.' (Bg)

Moreover, Stjepanović (1998: 532) observes that the lower (accusative) clitic may be deleted under identity in VP ellipsis, leaving the higher (dative) clitic pronounced. It is also possible to delete both pronominal clitics and pronounce only the auxiliary. Bošković (2002: 331) shows that the deletion is not possible in Bulgarian.

- (5) a. Mi *smo* *mu* *ga* dali, a i  
we are<sub>AUX</sub> him<sub>DAT</sub> it<sub>ACC</sub> gave and also  
vi *ste* *mu* ~~*ga*~~ ~~*dali*~~.  
you are<sub>AUX</sub> him<sub>DAT</sub> it<sub>ACC</sub> gave  
'We gave it to him, and you did, too.' (SC)
- b. \*Nie *sme* *mu* *go* dali, i vie  
we are<sub>AUX</sub> him<sub>DAT</sub> it<sub>ACC</sub> gave and you  
ste ~~*mu*~~ ~~*go*~~ ~~*dali*~~ (sūšto).  
are<sub>AUX</sub> him<sub>DAT</sub> it<sub>ACC</sub> gave too  
'We gave it to him, and you did too.' (Bg)

Next, Progovac (1993) points out that pronominal clitics may raise out of subjunctive clauses. In Migdalski (2006: 217) I observe that clitic climbing is never an option in Bulgarian.

- (6) a. Milan *želi* da *ga* vidi.  
Milan wishes that him<sub>ACC</sub> sees  
'Milan wishes to see him.'  
b. ?Milan *ga* *želi* da vidi. (SC)
- (7) a. Manol *iska* da *go* vidi.  
Manol wishes that him<sub>ACC</sub> sees  
'Manol wishes to see him.'  
b. \*Manol *go* *iska* da vidi. (Bg)

Another contrast between verb-adjacent and second position cliticization is related to the interaction between negation and clitics. In many Slavic languages the negative particle *n(i)e* attracts and incorporates into other elements (see, e.g., Rivero 1991). In Serbo-Croatian, the process is restricted to verbs; pronominal clitics (on a par with full nominal XPs) may not incorporate into negation (see 8). By contrast, in Bulgarian negation incorporates into pronominal clitics (see 9).

- (8) a. Ne cini *mi se* da...  
 NEG seems me<sub>DAT</sub> REFL that  
 ‘It doesn’t seem to me that...’  
 b. \*Ne *mi se* cini da... (SC)

- (9) a. Ne *mi se* struva, če...  
 NEG me<sub>DAT</sub> REFL seems that  
 ‘It doesn’t seem to me that...’  
 b. \*Ne struva *mi se*, če... (Bg)

Finally, the two types of languages differ with respect to the Person Case Constraint (PCC). The PCC is a restriction concerning the co-occurrence of pronominal clitics in ditransitive constructions. It requires that the accusative clitic that appears with a dative clitic be in the 3<sup>rd</sup> person. The constraint is not operative in all languages. It does not hold in Serbo-Croatian (Migdalski 2006: 198; see (10)) and Slovenian (Rivero 2005), whereas in languages with verb-adjacent clitics (Bulgarian, see Hauge (1999; see (11), Macedonian (Migdalski 2006: 198)) a violation of it leads to strong ungrammaticality.

- (10) Ja *im te* preporučujem.  
 I them<sub>DAT</sub> you<sub>ACC</sub> recommend  
 ‘I recommend you to them.’ (SC)

- (11) a. \*Az *im te* preporučvam.  
 I them<sub>DAT</sub> you<sub>ACC</sub> recommend  
 ‘I recommend you to them.’  
 c. Az *im ja* preporučvam.  
 I them<sub>DAT</sub> her<sub>ACC</sub> recommend  
 ‘I recommend her to them.’ (Bg, Hauge 1999)

The way the contrasts described above have been accounted for in the literature (see Stjepanović 1999, Bošković 2001, and others) is as follows. The fact that in Serbo-Croatian it is possible to delete one of the two pronominal clitics (see (5)) or separate them from each other (see (3) and (4)) shows that they do not cluster, do not form a single constituent and that they may not adjoin to a single head. Moreover, they must land in XP-positions, since they cannot incorporate into the negative head (see (8); this is precluded by the Chain Uniformity Condition). Given this, Stjepanović (1999) argues that each pronominal clitic targets a designated specifier in the extended VP projection. By contrast, clitics in Bulgarian all seem to adjoin to a single head and form a constituent. Assuming with Anagnostopoulou (2003) that the PCC is a result of a *phi*-feature checking incompatibility, I suggested in Migdalski (2006) that in Bulgarian pronominal clitics adjoin to a head with active *phi*-features, such as T. A plausible assumption to make is this type of cliticization is not possible in languages such as Serbo-Croatian because a suitable head for adjunction (in this case, T) is not available. In the next sections I argue that this indeed might be the case. Diachronic data presented in the next section show that pronominal clitics in Old Church Slavonic were verb-adjacent. With the loss of morphological tense distinctions (analyzed here as the loss of TP) in some of the languages that subsequently evolved, pronominal clitics could not adjoin to T any more.

## 2 Properties of clitics in Old Slavic

The sentences in (12) exemplify clitic placement in Old Church Slavonic (OCS). In OCS, second position was uniformly occupied only by clitics encoding the illocutionary force: the question/focus particles *li* and *že*, and the complementizer clitic *bo* ‘because’ (Radanović-Kocić 1988: 151). The sentence in (12b) shows that pronominal clitics do not target the second position, but rather, they are adjacent to the verb.

- (12) a. Ašte *li* *že* ni i novōjō razderetъ.  
           if Q FOC not also new tear<sub>FUT</sub>  
           ‘Or else he will tear the new one.’ (Pancheva et al 2007)

- b. Elisaveti *že* ispl̃ni sę vr̃meę roditi  
 Elizabeth FOC fulfilled REFL time give-birth  
*ei.* I rodi sñ.  
 her<sub>DAT</sub> and gave-birth son<sub>ACC</sub>  
 ‘The time for Elizabeth to give birth was fulfilled, and she  
 gave birth to a son.’ (Pancheva et al 2007)

In later stages of history, pronominal clitics started to move to second position in some Slavic languages. For instance, Radanović-Kocić (1988) observes that the cliticization pattern in Old Serbian between the 12<sup>th</sup> and the 15<sup>th</sup> century of clitics resembles the one of OCS, with second position at first occupied only by operator clitics (cf. 13a and b). Gradually, however, pronominal clitics start to appear in second position, first only in the presence of operator clitics in the cluster (cf. 13c), then also independently (cf. 13d). Pronominal clitics are verb adjacent even in a relatively recent Montenegrin example in (13b). Strikingly, in this variant of Serbo-Croatian tense morphology have been preserved (see section 4).

- (13) a. Koi *e* privo *im̃* byl̃  
 which is<sub>AUX</sub> first they<sub>DAT</sub> were  
 ‘Which was first to them.’ (12-15<sup>th</sup> SC, R-K 1988: 160)
- b. Ako iguman sakrivi *mi*.  
 If prior do-wrong me<sub>DAT</sub>  
 ‘If the prior does me wrong.’ (18/19<sup>th</sup> c., Montenegro, R-K 1988: 166)
- c. Kto *li* ga ime taiti.  
 who Q him<sub>ACC</sub> has hide<sub>INF</sub>  
 ‘Who will be hiding him?’
- d. Dokle *mu* se ne ispravi.  
 until him<sub>DAT</sub> REFL NEG corrects  
 ‘Until it is corrected (for him).’ (14<sup>th</sup> c. SC, R-K 1988: 158)

### 3. Tense marking in Old Church Slavonic

This section shows that the shift from verb-adjacent to second position cliticization that occurred in some Slavic languages coincides with the decline of tense morphology and the adaptation of aspectual markings as the only way of marking temporal relations.

In all Slavic languages verbs form aspectual pairs. One member of each pair is specified for perfective aspect, the other for imperfective aspect. A similar way of specifying aspectual distinctions was found in Proto-Indo-European. It is generally assumed (see, e.g., Lehmann 1993) that initially temporal distinctions were marked via aspect, whereas tense morphology developed at a later stage. In Proto-Indo-European, verbs consisted of three morphemes: a stem that was formed by a root followed by a thematic suffix, and an inflectional suffix. The thematic suffix assigned a stem to a particular inflectional paradigm and could also specify aspectual information. In late Proto-Indo-European, however, thematic suffixes blended with the inflectional endings and consequently, verbs acquired a two-morpheme structure. This is shown in (14), which presents the Late-Proto-Slavic paradigm of the verb *\*nesti* and the way the forms for the 1<sup>st</sup> person singular and the 3<sup>rd</sup> person plural incorporated the inflection and thematic vowel into a single morpheme. The change was triggered by the nasalization of the vowel *ō* when it was followed by nasal consonants, as in *nes-o-nti* → *nes-ōtŭ*.

- (14) The development of the paradigm of the verb *\*nesti* ‘to carry’ in the present tense in Proto-Slavic

	SINGULAR	DUAL	PLURAL
1	<b>nes-ō-mŭ</b> → <b>nes-ō</b>	nes-e-vě	nes-e-mŭ
2	nes-e-šŭ	nes-e-ta	nes-e-te
3	nes-e-tŭ	nes-e-te	<b>nes-o-nti</b> → <b>nes-ōtŭ</b>

(Proto-Slavic, Długosz-Kurczabowa & Dubisz 2001: 265)

The fusion of the two morphemes made it more difficult to mark aspect morphologically in Late-Proto-Indo-European. However, Proto-Slavic extended the aspectual system on the verb, as it retained the original way of marking aspect in PIE and additionally acquired the aspectual past tenses, aorist and imperfect (see Klemensiewicz et al 1964: 242-253, Młynarczyk 2004 ch. 1). Moreover, at a later point Old Slavic developed its own compound tense constructed with forms that were originally adjectives ending in *\*-lo* and then were reanalyzed as *l*-participles (see Damborský 1967). These participles showed subject agreement in *phi*-features, could be marked for perfective or imperfective aspect, and were accompanied by the auxiliary verb BE. The auxiliary BE was also marked for different aspectual forms and the compound tense expressed different temporal relations depending on the aspect of BE: the perfective

form of BE produced future meaning (in the so-called Future II construction), the imperfective form of BE was used in present perfect, whereas in the past perfect, the verb BE was marked for the imperfect tense or for aorist combined with imperfective aspect. Table (15) presents the verb *nesti* in various tenses in Old Church Slavonic, in perfective and imperfective aspect.

(15)

TENSE/ASPECT	IMPERFECTIVE	PERFECTIVE
3SG PRESENT	nesetъ	ponesetъ
3SG AORIST	nese	ponese
3SG IMPERFECT	nesěaše	ponesěaše
3SG PERFECT	neslъ jestъ	poneslъ jestъ
3SG FUTURE II	bōdetъ neslъ	bōdetъ poneslъ

(The verb *nesti* 'to carry' in different tenses in OCS, Van Schooneveld 1951: 97)

As shown in table (15), aspect was profusely marked in Old Slavic, both on the auxiliary verb and the main verb, and in addition in the past tense, via the tense forms of aorist and imperfect and via the perfective/imperfective aspectual morphemes. In most cases aorist forms were marked for perfective aspect and imperfect forms for imperfective aspect. Combinations of perfective forms of the imperfect tense or imperfective forms of the aorist may seem semantically infelicitous, but they were possible, which indicates that tense and aspect were two, largely independent systems. Dostál (1954: 599-600) estimates that the former combination constitutes approximately 1% of verb forms in OCS texts, while the latter 40%. As an example, the sentence in (16) from *Suprasliensis* 122.30 contains an imperfective form of the verb *besědova* in the aorist. The meaning of the verb is that the event has occurred, but there is no indication whether it is completed.

- (16)      Aky kъ člověku bo besědova                    i  
           as to man for converse<sub>IMPF.AOR.3SG</sub> and  
           vъzira                    na ŋъ.  
           look<sub>IMPF.AOR.3SG</sub> to him  
           'For he conversed<sub>IMPF.AOR</sub> with him and looked<sub>IMPF.AOR</sub> at  
           him as if he were a man.'                    (OCS, Huntley 2002: 151)

#### 4. Modification of Tense marking in Slavic and the syntax of clitics

The rich system of tenses described in the previous section has been preserved only in Bulgarian and, to a lesser extent, in Macedonian. Other Slavic languages have lost aorist and imperfect and the only tense morphologically marked in these languages is the present tense. Past events are characterized through a compound tense formed with the imperfective form of the auxiliary “be” and the *l*-participle. This tense had a resultative meaning in Old Church Slavonic (see Table (15)).

- (17) Ana *je* (na)pisala pismo.  
 Ana <sub>IS\_AUX</sub> write<sub>PRF/IMPF.PART.F.SG</sub> letter  
 ‘Ana wrote/was writing a letter.’ (SC)

The *l*-participle is not specified for the past tense or any other tense, given that in all Slavic languages it is used in various irrealis contexts (see Błaszczak and Klimek-Jankowska, this volume). Moreover, when accompanied by a perfective form of the auxiliary BE, it is used to express the future in Slovenian and in Polish (see 18a). Alternatively, in North Slavic the future may be expressed by using a perfective form of a verb in the present tense (cf. 18b).

- (18) a. Będę pisać/pisał list  
 am<sub>PRF</sub> write<sub>IMPF.INF/PART.M.SG</sub> letter  
 ‘I will be writing a letter.’  
 b. Napiszę list  
 write<sub>PRF</sub> letter  
 ‘I will write a letter.’ (PI)

The decline of the morphological tense distinctions seems to coincide with the loss of verb-adjacent pronominal clitics. For instance, in Slovenian the simple past tenses were lost very early. Vaillant (1966: 60) points out that already in Old Slovene aorist was limited to a few verbs. Correspondingly, second position pronominal clitics are attested early as well, as they are found already in *The Freising Manuscripts*, the oldest Slovene text from the 10<sup>th</sup>-11<sup>th</sup> century. In Czech both aorist and imperfect were lost in the 14<sup>th</sup> century (Stieber 1973: 53). In Serbo-Croatian, aorist is used as a narrative tense in certain dialects, especially by modern fiction writers in Montenegro<sup>1</sup> (see Lindstedt 1994: 39), but

<sup>1</sup> The prevalence of aorist in Montenegro ties in with the fact that in Montenegrin dialects

otherwise the compound tense formed with the *l*-participle is used to characterize past events.

Conversely, the system of tenses in Bulgarian resembles that of OCS: it is independent of the aspect system, as verbs in the aorist and imperfect tenses can be freely marked for either perfective and imperfective aspect. By comparison, the tense system of Macedonian is somewhat impoverished: aorist is limited to certain expressions, while imperfect is the default past tense (Tomić 1989: 366). Moreover, aorist verbs can be marked only for perfective aspect and imperfect verbs only for imperfective aspect. This is a recent restriction, as imperfective aorist was productive till the middle of the 20<sup>th</sup> century (Friedman 2002: 267). Interestingly, the gradual simplification of the Macedonian tense systems apparently goes hand in hand with the modification of Macedonian cliticization. Although clitics in Macedonian are as a rule verb-adjacent, in nominal and adjectival predicates they are in second position (see 19), which indicates according to Tomić (2000) and Bošković (2001) that Macedonian is in an intermediate stage between a language with verb-adjacent and with Wackernagel clitics.

- (19) a. \**Mu e tatko (na deteto).*  
           him<sub>DAT</sub> is father to child-the  
       b. *Tatko mu e na deteto*  
           father him<sub>DAT</sub> is to child-the.  
           ‘He is the father of this child.’ (Tomić 2000: 295)

### 5. Toward an analysis

The previous sections have shown that the change in the position of pronominal clitics and the modification of the cliticization pattern is connected to the impoverishment of tense marking. To relate these two facts, I submit that the decline of tense was reflected via the loss of TP, as a result of which pronominal clitics cannot adjoin to T any more. At first blush this may seem to be a radical proposal, since TP is a core syntactic projection, yet there are a number of analyses suggesting that it may be absent in some languages. For instance, in diachronic studies,

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pronominal clitics did not consistently appear in second position as late as in the 19<sup>th</sup> century (see example 13b). The decline of tense distinctions was not completely uniform, though. An anonymous reviewer informs me that the Montenegrin national epic *Gorski vijenac* by Petar II Petrović-Njegoš (published in 1847) contains aorist and imperfect tenses, but the clitic are in second position.

Osawa (1999) postulates that TP did not project in Old English. Likewise, Van Gelderen (1993) proposes that T in English emerges around 1380, at the end of the Middle English period, and that this process overlaps with the emergence of *do*-support. In the same vein, Kiparsky (1996) adopts Van Gelderen's proposal and suggests that switch from the OV to the VO order in Germanic is related to the rise of T (his I). In a synchronic perspective, Fukui (1988) and Shon et al (1996) provide arguments for the lack of TP in Japanese and Korean, respectively. Likewise, Lin (2010) shows that if a TP-less account of Chinese is assumed, a number of empirical facts are explained straightforwardly, including the lack of a distinction between finite and non-finite clauses, case-related movement, and the possibility of having a nominal predicate as the main predicate.

Conspicuously, languages that lack morphological tense also lack overt articles. Bošković (2010) captures this fact by suggesting that TP is projected only in those languages whose nominals also project DP.<sup>2</sup> By adopting this postulate, Bošković accounts for many properties that DP/TP-less languages have in common. For example, they lack expletives, but this lack is not surprising, as the role of expletives is to satisfy the EPP requirement of Spec, TP, a projection that does not exist in such languages. Moreover, languages with articles display some subject-object asymmetries. For instance, in English it is possible to extract an element out of an object, but not out of a subject (cf. 20).

- (20) a. \*Who did friends of see you?  
 b. Who did you see a friend of?

It has been noted though that this restriction only holds if the subject is in Spec, TP, but not if it is in a lower position (see Gallego and Uriagereka (2007) for Spanish). Bošković examines a large sample of languages in which such subject-object asymmetries are never at work

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<sup>2</sup> An anonymous reviewer points out that this hypothesis implies that Old Church Slavonic had articles. This is a matter of debate. Dimitrova-Vulchanova and Vulchanov (2011) show that *Codex Suprasliensis* contains a homophonous element *ṭ* that may function as a demonstrative or an enclitic article. When used as an article, it lacks the deictic function of the demonstrative and may encliticize on different categories within the nominal expression. Moreover, in the OCS relics from the 10<sup>th</sup>-12<sup>th</sup> century the article and the demonstrative are in complementary distribution. The article may also appear in OCS in the contexts in which it is absent in the Greek vorlage, so it may have been an independent category at that stage.

and observes that these languages do not have articles or morphological tense. This suggests that subjects in such languages land in a different projection than Spec, TP, a prototypical subject position. Finally, Bošković notices that article-less languages do not exhibit the sequence of tenses. As this phenomenon is related to the TP projection, it is expected that it does not occur in languages without this projection.

Bošković provides a theoretical motivation for the lack of TP in languages without tense morphology. He proposes a licensing relationship for functional elements which specifies that an (unvalued) interpretable feature must be morphologically expressed. Following Pesetsky and Torrego (2007), he assumes that there is an Agree relationship between T and V, in which T carries an unvalued interpretable tense feature, while V has a valued uninterpretable tense feature.

(21) T (unvalued *i*Tense) V (valued *u*Tense)

The tense feature of T is interpretable and unvalued, so it must be morphologically expressed. This is the case in English, which overtly marks the opposition between the past and the present tense via the *-ed* versus  $\emptyset$  morphemes. If tense distinctions are not rendered morphologically in a language, the TP projection is not present.

What does the presence or absence of TP imply for the syntax of clitics? A common assumption made in the literature on verb-adjacent pronominal clitics in Romance languages is that clitics must raise from their base positions within VP and pro- or encliticize by adjoining onto the verb in T. A number of proposals have been made to motivate this assumption and to find a trigger for the cliticization. For example, Nash and Rouveret (2002: 177) posit that clitics must adjoin to a “substantive” (lexical) category endowed with active  $\phi$ -features, such as T. The fact that the Person Case Constraint, which is related to  $\phi$ -feature checking, holds in Bulgarian and Macedonian (see examples (10) and (11)) seems to give support for this proposal. A related question, though, is why pronominal clitics raise from their VP-internal positions in the absence of T in languages such as Serbo-Croatian and move to second position. A potential trigger in this case might be a semantic requirement, as has been suggested by Uriagereka (1995), who posits that since pronominal clitics are specific and referential, given Diesing’s (1990) Mapping Hypothesis, they must move out of VP. Still, since clitics raise out of VP whether T is present or not, a legitimate question to ask is why

diachronically the option of clitic adjunction to the verb in T predates second position cliticization, which becomes available only once T is lost. I would like to attribute this preference to prosodic factors and to a principle of phonology/syntax matching, which specifies that a syntactic constituent should correspond to a prosodic word. In languages with verb-adjacent clitics, in which pronominal clitics are adjoined to a single head, a prosodic word is a syntactic constituent. This is not the case in languages with second position clitics such as Serbo-Croatian, in which each clitic lands in the specifier of a separate functional head.

### Conclusion

Summarizing, this paper has argued that the loss of morphological tense distinctions in some Slavic languages has led to a shift from verb-adjacent to second position cliticization. If this analysis is correct, Slavic languages underwent a reversal of the process that occurred in Ancient Greek, in which according to Kiparsky and Condoravdi's (2002) account, second position clitics switched to verb-adjacency with the emergence of IP.

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## **First-person Indexicality and Registers of Interpretation\***

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“There are many words that have a kind of first-person indexicality as part of their meaning, either exclusively or as one option.”

(Barbara Partee, Implicit arguments, Lecture 5 at RGGU, Moscow, October 6, 2009)

### **Canonical and non-canonical communicative situations**

According to Partee 1989, words with implicit arguments may have three readings: bound variable, discourse anaphora and deictic (i.e. directly referential, or indexical) reading. For example, Russian *edva li* ‘hardly’ has an implicit argument corresponding to the person in doubt, and in (1) it is directly referential – it refers to the speaker of the utterance:

- (1) Ivan *edva li* vernetsja ‘John will *hardly* return’ = ‘the speaker doubts that John will return’.

That *edva li* has an implicit argument can be confirmed by the fact that a sentence beginning, e.g., with *Esli Ivan edva li vernetsja* sounds

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\* I am grateful to Barbara Partee for her immeasurable help: it’s due to Barbara that I got access to literature on truth-functional semantics and could overcome at least some of its technical difficulties.

strange at the beginning of the dialogue; in fact, it definitely refers to the preceding context where the subject of doubt should be mentioned. Thus, *edva li* has an implicit argument – which by default refers to the speaker.

The implied speaker can play in the semantics of a word (or construction) the role of the subject of perception, subject of consciousness, subject of speech and reference point for deixis. Roman Jakobson, in his famous article on SHIFTERS (Jakobson 1957), united the two main spheres of subjective meanings, deixis (indexicality) and modality, into one. Instead of “shifters” I use the term “egocentrals”, coined by Bertrand Russell. (The term “indexicals” seems to be used nowadays in a broad sense as well, including both deixis and modality; but it cannot be so easily translated into Russian.) Later on I’ll divide egocentrals into primary and secondary ones.

The speaker can fulfill all the range of its functions only in the context of a CANONICAL communicative situation, when the speaker is provided with a synchronous addressee which is in the same place and in the field of vision of the speaker. In a non-canonical situation interpretation of linguistic entities may change. The notion of non-canonical speech situation was introduced in Lyons 1977, but Lyons had in mind what can be called WEAKLY non-canonical situations, when the speaker and the addressee have no common space (and field of vision) or no common moment of speech. A communicative situation is called STRONGLY non-canonical when both the addressee and the speaker **are not present** in the context of utterance.

There are two major types of strongly non-canonical communicative situations – NARRATIVE and HYPOTAXIS. In Fillmore 1975 it was shown how interpretation of the verb *come* changes in the context of narrative. The context of hypotaxis is easier to begin with.

In (2) the implicit argument corresponding to the person in doubt refers not to the speaker but to the subject of the matrix sentence:

- (2) Masha sčitaet, čto Ivan *edva li* vernetsja ‘Masha thinks that John will *hardly* return’.

There are other examples of referential shift of the same type. In the context of a question speaker-oriented deixis can be transformed into addressee-oriented one.

- (3) a. – Na doroge *pokazalsja* vsadnik <v moem pole zrenija> ‘On the road *appeared* a rider <in my field of vision>;  
 b. – Nu čto, on tak i ne *pokazalsja*? <v tvoem pole zrenija> ‘So he hadn’t yet appeared? <in your field of vision>.’
- (4) a. Vkusno <mne> ‘it is tasty <to me>’;  
 b. Vkusno <tebe>? ‘is it tasty <to you>?’

Formal description of first-person indexicality develops intensively. I mean Partee 1989, Condoravdi & Gawron 1996, Lasersohn 2005, Stephenson 2005, Moltmann 2005, Schlenker 2003 in the first place. My aim is not to give a formal semantic account of “speaker-implicating” words but just to show their diversity and demonstrate peculiarities of their behavior.

I’ll speak separately about four different roles (in Fillmore’s sense) that the speaker can play in the meaning of words or constructions: speaker as a subject of perception, as a subject of consciousness, as a subject of speech and as a subject (or origo) of deixis.

### 1. Speaker as a subject of perception

Sentence (1.1) (example from Apresjan 1986) describes a situation in which, apart from the road and the rider, some syntactically non expressed person is present – the observer of the event (note that *pokazat’sja* means, literally, ‘to show oneself’, so the perceiver is inherent in its lexical semantics):

- (1.1) Na doroge *pokazalsja* vsadnik  
 ‘On the road *appeared* a rider’.

Obviously, this person is the speaker. This supposition is confirmed by the deviance of (1.2) with the 1<sup>st</sup> person subject, who is the object of perception:

- (1.2) \*Na doroge *pokazalsja* ja  
 ‘\*On the road *appeared* I’.

In a hypotactic context (requiring a non-canonical register of interpretation) the 1<sup>st</sup> person subject of *pokazat’sja* is normal – in fact,

now it is not the speaker who is the observer of the event, but the subject of the matrix sentence.

- (1.3) Ivan videl, čto v kakoj-to moment na doroge *pokazalsja* ja.  
 ‘Ivan saw that at some moment I *appeared* on the road’.

A kind of PROJECTION takes place: from speech-register to non-speech-register, and correspondingly, from direct reference to anaphora.

A projection from direct reference to anaphora can take place also in narrative. Though it should be acknowledged that in some contexts the subject of perception cannot be pointed at with certainty:

- (1.4) Ja ponjal, čto sprava *pokazalsja* korabl’, potomu čto vse brosilis’ k pravomu bortu.  
 ‘I realized that a ship *appeared* on the right, because everybody rushed to the right board’.

The first example of a word presupposing the speaker in the role of the observer was the English verb *to lurk* (Russian *majačit’*), described in Fillmore 1968. But it was Apresjan’s example with the verb *pokazat’ sja* that became a real source of inspiration.

Other examples of verbs (and verb usages) with an implicit argument for the subject of perception: *vozniknut’*, *pojavit’ sja*, *isčeznut’*, *propast’*; *prostupit’*, *vystupat’*, *vygljadyvat’*, *vysovyvat’ sja*, *progljadyvat’*, *proskol’znut’*, *promel’knut’*, *mel’kat’*; *paxnut’*, *vonjat’*, *zvučat’*, *poslyšat’ sja*, *razdat’ sja*, *donosit’ sja* (*Zvučit kolokol, i donositsja penie iz sobora*), *svetit’ sja*, *blestet’*, *mercat’*; *razverznut’ sja*, *raskinut’ sja*, *rasstilat’ sja*; *vysit’ sja*, *torčat’*; *rejat’* (Bulygina 1982: 29); *belet’*, *černet’* (Apresjan 1986). There are about 3500 existential verbs mentioned in the dictionary Шведова 2007, many of them with an implicit argument for the subject of perception. The verb *toporščit’ sja* is not included in the list, though it might have been there:

- (1.5) Я человек эпохи Москвошвее.  
 Смотрите, как на мне *топорщится* пиджак.  
 (О. Мандельштам)

Many verbs have a valence for an implicit observer in grammatically derived diatheses, cf. *obnaruzit'* with the explicit subject of perception and *obnaruzit'sja* with the implicit one.

See also: *vydelit'sja, vyiskat'sja, vyrazit'sja, vyjavit'sja, zadevat'sja, zapropastit'sja, zapechatlet'sja, zaslonit'sja, zaterjat'sja, izobrazit'sja, najtis', obnazit'sja, oboznačit'sja, otobrazit'sja, poterjat'sja, projasnit'sja, razyskat'sja, skryt'sja, utait'sja; progljadyvat'sja, prosmatrivat'sja, različat'sja, smotret'sja, ulavlivat'sja, usmatrivat'sja; oščuščat'sja, počuvstvovat'sja, čuvstvovat'sja.*

A derived diathesis with the implicit observer can be unmarked:

- (1.6) a. Ja *obnaruzil* u mal'čika nezaurjadnuju èrudiciju  
 'I *discovered* a remarkable erudition of the boy' [the subject of perception is explicit];  
 b. Mal'čik *obnaruzil* nezaurjadnuju èrudiciju.  
 'The boy *showed* a remarkable erudition' [the subject of perception is implicit].

The Genitive of negation couldn't have been fully explained if there had been no notion of observer at our disposal. In fact, after Babby 1980 (see also Babyonyshev & Brun 2002) the Genitive subject of negated verbs in Russian was explained by existential, i.e. non referential semantics of the verb. Genitive subject of locative verbs (as in *Koli ne bylo doma*), which presuppose the existence and thus have a referential subject, was treated by Babby as an exception. In Paduceva 1992 it was claimed that not only existential but also perceptual verbs can account for the Genitive subject (*Koli v dome ne obnaruzhilos'*), and Genitive subject in locative contexts was explained by the fact that GenNeg construction adds an implicit observer to the concept of the situation (and/or perceptual semantics to a locative verb).

Genitive in (1.7a) is clearly a mistake (the utterance was overheard as said to the mobile telephone by a woman who couldn't answer on the spot the question of her client: the conversation took place in a bank and she had no computer at her disposal), but in (1.b) Genitive is at place, for it presupposes the observer at the institute of the speaker:

- (1.7) a. \*Menja net v office  
 'I [Gen] am not in the office';

## b. Menja zavtra ne budet v institute

‘I [Gen] won’t be in the institute tomorrow’ [example by Anna Zalizniak].

An implicit first-person-subject may not be equal to the explicit one. With no explicit subject the verb *posлышаться* means ‘hear’, the speaker being the implied subject of perception, see (1.8); explicit subject changes the meaning of the verb – it means uncertain perception, see (1.9):

(1.8) *posлышался стук колес* = ‘one could hear clattering of the wheels’;

(1.9) *мне послышалось, что вы что-то сказали* ≈ ‘I heard you say something, if I’m not mistaken’.

Probably, what we have in (1.8) is not just implicit first-person-subject of perception but what in Moltmann 2005 is presented as generic *one*: “Generic *one* expresses (contextually restricted) quantification over individuals insofar as the relevant agent identifies with them”.

## 2. Speaker as a subject of consciousness

Semantic decomposition of the verb *voobražat’* ‘imagine’ in one of its meanings (suggested by no other than G. Frege, see Фрере 1977) resorts to an implied subject of consciousness:

X *voobražает, что* P ‘X *imagines that* P’ = ‘X believes that some P favorable for him takes place; the speaker doesn’t believe that P’.

The implied (and syntactically non-expressible) subject of the opposite belief is the speaker:

(2.1) *Ee muž voobražает sebja geniem*

‘Her husband *imagines* himself to be a genius’ = ‘Her husband *believes* himself to be a genius; the speaker doesn’t think so’.

But in a hypotactic context the role of the subject of the opposite belief is played by the subject of the matrix clause – the same rule of projection is at work as in the case of *pokazat'sja*:

(2.2) Marija znaet, što ee muž *voobražает* sebja geniem

‘Maria knows that her husband *imagines* himself to be a genius’ ⊃  
 Maria doesn’t think so.

The subject of consciousness is not the same beast as the subject of perception, i.e. the observer. Only the implied observer generates anomaly in the context of the 1<sup>st</sup> person subject, as in example (1.2), where it makes the subject and the object of perception coincide. In fact, the observer is necessarily an EXTERNAL observer, and this is the semantic source of anomaly. The subject of consciousness has no definite location and no restriction of the similar kind. For example, the adverb *neozhidanno* = ‘contrary to one’s expectations’, ‘unexpectedly’ presupposes the subject of consciousness, and identity of the subject and object of consciousness is not excluded in the context of *neozhidanno*:

(2.3) — А как вы думаете, — неожиданно для самого себя  
 поинтересовался я.

Still the rules of projection for the implied subject of consciousness are the same as for the subject of perception:

(2.4) Мать пишет, что когда отцу прочли наше письмо, он  
*неожиданно* рассердился [= ‘неожиданно для матери’].

Many stative predicatives imply, by default, the implied 1<sup>st</sup> person subject of consciousness: *bol'no, veselo, vidno, možno, vidimo, zametno, interesno, žutko, gostno, dosadno, prijatno, xorošo, važno, bezrazlično, ljubopytno, legko, tošno, nelovko, zabavno, interesno, žarko, dušno, obidno, radostno, skučno, grustno, strašno, trudno, legko, jasno, poxože; plevat', len', žal', žalko, xorošo, oxota, neoxota*; impersonal verbs, such as *xočetsja, pridetsja, ostaetsja*, and many others; ‘it is nice to hear from you’ [= ‘nice for me’]. Many adjectives have a valence for the subject of consciousness which is by default filled by the speaker:

*priemlemyj; nepostižimyj, nerazrešimyj; važnyj, glavnyj; neponjatnyj, strannyj.*

Epistemic modality implies the subject of consciousness: *He may be in Boston now* means ‘that he is in Boston doesn’t contradict to what I, as the speaker, know’.

Predicates of taste and evaluation also belong to the class of linguistic entities implying the 1<sup>st</sup> person subject of consciousness; cf. Stephenson 2007, Moltmann 2006 on problems of relative truth and faultless disagreement connected with these predicates.

Words implying the subject of consciousness, as well as those implying the observer, can be called SECONDARY EGOCENTRICALS, for they easily shift their reference, undergoing projection rules in the context of hypotaxis or narrative.

### 3. Speaker as a subject of speech

The speaker plays the role of the subject of speech in the semantics of parenthetical verbs and sentences, such as *честно говоря, кстати, признаться сказать, между нами говоря, почему знать, пожалуй*; some of them imply not only the speaker but also the addressee. They are at place in a speech discourse (and also in a first-person narrative or in fragments of a narrative texts belonging to the narrator), but excluded in the hypotactic context:

- (3.1) а. *Честно говоря*, этот нож не годится;  
 б. \*Иван считает, что, *честно говоря*, этот нож не годится.

In a narrative some parentheticals with a similar meaning are acceptable; the implied subject is then personified in a character, who expresses his opinion in his inner speech. But this character is now the subject of consciousness, rather than the subject of speech:

- (3.2) Сергей Сергеевич нахмурился. *Откровенно говоря*, высказанное женой опасение его самого беспокоило (В. Войнович. *Иванькиада*).

The implied subject of speech plays an important role in the semantics of illocutionary modality, but this is not at issue here. In

general, the subject of speech doesn't project and, thus, subject of speech implying words belong to primary egocentrals.

#### 4. Speaker as a subject of deixis

With strictly deictic words, such as *segodnja* 'today', hypotactic projection doesn't work as well.

(4.1) On *včera* skazal mne, čto *segodnja* zanjat  
'He told me *yesterday* that he is busy *today*'.

In (4.1) the word *segodnja* cannot mean 'yesterday', which would have been the case if hypotactic projection had been possible, i.e. if the subject of the higher clause could be the bearer of the present tense. The only possible "subject" for deictic *segodnja* in hypotactic position is the speaker.

In the article by Ph.Schlenker called "A plea for monsters" (2003) the following idea was suggested. Normally, pure indexicals, of which "I" is the clearest example, always get their reference from the speech act context, no matter how deeply they are embedded under verbs like *believe* or *say* (not counting direct quotation). A "monster" would be something that is normally a pure indexical, but it can sometimes get its value from the subject of a higher verb. Amharic "I" seems to be a monster; a sentence translated as *John said that I won* is ambiguous: it can be interpreted either as 'John said that I won' or as 'John said that he won'.

For Russian *ja* such anaphoric use is possible only as an often made mistake of colloquial speech; here is a widely cited example (the first person subject of *ne дам* refers to the grammatical subject of the matrix sentence, not to the speaker of the utterance as a whole):

(4.2) Вот теперь трактирщик сказал, что *не дам* вам есть, пока не заплатите за прежнее (Гоголь. Ревизор)

Similar examples from other languages can be found in Jespersen's "Philosophy of grammar".

But for the Russian *сейчас* ‘now’ a shifted, namely, projective interpretation is accepted as a norm – albeit not in a hypotactic context but in narrative; see the example from Апресян 1986:

(4.3) Он только *сейчас* понял, какой радостью был для него приезд жены.

Sentence (4.3) has two interpretations:

(i) when interpreted in the speech register sentence (4.3) is embedded in a speech act that has a speaker (distinct from the sentence’s subject), and *сейчас* receives DEICTIC interpretation – it denotes the time of the speech act (i.e. the present moment of the speaker);

(ii) when interpreted in the narrative register *сейчас* has ANAPHORIC interpretation; it denotes the ongoing moment in the development of events; there is only one subject, who verbalizes his own inner state.

In a hypotactic context anaphoric interpretation of *сейчас* is impossible. In fact, in (4.4a) the interpretation of *сейчас* is unambiguously deictic, and (4.4b), where this interpretation is pragmatically excluded, is an impossible sentence:

(4.4) а. Он сказал, что он *сейчас* в гостинице;  
 б. \*Он вчера сказал, что он *сейчас* в гостинице.

Schlenker’s opposition of pure indexicals and shiftable indexicals corresponds to the opposition of primary and secondary egocentrals in Падучева 1996. Words presupposing the implied speaker as a subject of perception or consciousness are secondary egocentrals; words implying the speaker as a subject of speech or deixis are primary egocentrals – their implied speaker normally resists projection (though in some languages some exceptions are possible, and the difference between the two non-canonical registers of interpretation should be taken into consideration).

Now to conclude, it should be mentioned that the following two notions should be set apart. One is the speaker as an IMPLICIT ARGUMENT in the meaning of words or constructions (this speaker can play the role of the observer, subject of consciousness, subject of speech or subject of deixis). Another is the speaker as a PARTICIPANT OF THE SPEECH ACT,

which the implicit argument may refer to in the context of a canonical speech situation.

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## On Numberlessness and Paucal Numerals in Russian

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### 1. Introduction

This paper is concerned with paucal numerals in Russian (see Babby 1987, Franks 1995, 1998, Ionin & Matushansky 2004, 2006, Pereltsvaig 2011b, Pesetsky 2010, Rappaport 1998, 2004, among others). Unlike non-paucal numerals, which occur with the (apparent) genitive plural forms, paucal numerals – which include *dva/dve* ‘two’, *tri* ‘three’, *četyre* ‘four’, *pol-* ‘half’, *poltora / poltory* ‘one and a half’, and complex numerals ending in 2-4 – occur with nominal complements in the (apparent) genitive singular form, while adjectival modifiers of such nouns occur in the genitive plural form:

(1) Paucal numerals

- |  |                                    |
|--|------------------------------------|
| a. tri stol-a  | b. tri knig-i                      |
| three table <sub>(MASC)-GEN.SG</sub>                       | three book <sub>(FEM)-GEN.SG</sub> |
| ‘three tables’   | ‘three books’                      |
| c. tri bol’šix stol-a                                      |                                    |
| three big <sub>GEN.PL</sub> table <sub>(MASC)-GEN.SG</sub> |                                    |
| ‘three big tables’   |                                    |

Thus, the first question to be addressed is why nominal complements of paucal numerals appear in the genitive singular rather than genitive plural form. The second question is why adjectival modifiers inside complements of paucal numerals appear in the plural rather than the singular form.

The most recent attempt to answer these questions has been made in Pesetsky (2010). According to him, paucals are not numerals but rather an expression of the [Number] feature. Furthermore, Pesetsky takes the singular morphology on the nouns in (1) to encode not the [+singular] feature, but numberlessness. In contrast, he takes the adjective in (2c) to be merged outside the scope of the paucal; hence, numberlessness does not apply (the correct word order with the paucal preceding rather than following the adjective is achieved through movement, as discussed below).

In this paper, I agree with Pesetsky on two points: first, that paucals introduce the [Number] into syntax/computation, and second, that number morphology can be an expression not only of the [Number] feature, but of numberlessness.

However, I also present two empirical challenges for Pesetsky's (2010) proposal: the first challenge concerns numberless nominals elsewhere in Russian, and the second challenge involves deadjectival nouns.

Given these challenges, I disagree with Pesetsky on the following points. First, I claim that not only paucals introduce the [Number] feature into syntax, but all numerals do. Second, unlike Pesetsky, who claims that singular morphology can be an expression of numberlessness, I maintain that it is plural morphology that can be so. Finally, I also disagree on the type of analysis that is required for the data in (1c): while Pesetsky proposes a syntactic analysis of these facts, I propose a morphological alternative.

In addition to providing an account for some well-known as well as some novel data, this paper addresses an additional "big picture" question: where does morphology stop and syntax begin (or vice versa)?

## **2. Numberless expressions in Russian**

As mentioned in the introduction, one of the empirical challenges for Pesetsky's analysis comes from numberless nominals elsewhere in

Russian. By “numberless” we understand expressions that are semantically number-neutral, that is meaning ‘one or more X’.<sup>1</sup>

Many languages around the world feature numberless (or “number neutral”) nominals that are morphologically singular. These include (Eastern) Armenian (Megerdumian 2011), Norwegian (Borthen 2003), Brazilian Portuguese (Schmitt & Munn 2002), Catalan (Espinal & McNully 2011), Spanish, Romanian (Dobrovie-Sorin et al. 2010), Even, Tagalog and Amharic (Corbett (2000: 13-16).

But unlike the languages listed above, Russian has several constructions which feature morphologically plural number-neutral nominals. These constructions include objects in bare habitual sentences (2a), complements in phrasal compounds (2b), complements of intensive reflexives (2c; Kagan & Pereltsvaig 2011a, b), and complements of the preposition *v* ‘into’ (2d; Bailyn 2004, Pereltsvaig 2006).

- (2) a. Maks stroit **doma**.  
 Max builds house<sub>PL</sub>  
 ‘Max is a house-builder.’
- b. remont **kompjuterov** / klonirovanie **životnyx**  
 repair computer<sub>PL</sub> / cloning animal<sub>PL</sub>  
 ‘computer repair’, ‘animal cloning’
- c. Lena najelas’ **kotlet**.  
 Lena *na-ate-sja* burgers<sub>GEN.PL</sub>  
 ‘Lena ate her fill of burger(s).’
- d. Putin soglasen ballotirovat’sja v **prezidenty**.  
 Putin<sub>NOM</sub> agrees to-run into presidents<sub>PL</sub>  
 ‘Putin agrees to run for president.’

The relevant nominals in (2) are not only semantically number-neutral (i.e. meaning ‘one or more’) but they exhibit a subset of the same properties that characterize number-neutral **singular** nominals in other languages (mentioned above); cf. Rullmann (2011). In particular, both number-neutral plurals in Russian and number-neutral singulars in other languages lack the functional syntactic structure; yet, both types of

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<sup>1</sup> Thus, the notion of “numberlessness” corresponds closely to Corbett’s (2000) notion of “general number”; however, he uses the term for a special form of the noun, not the meaning. See also, Sauerland et al. (2005).

nominals are not morphosyntactically incorporated into the verb (even if they are syntactically selected by the verb). Moreover, both number-neutral plurals in Russian and number-neutral singulars in other languages do not (necessarily) refer to kinds; some such number-neutral nominals exhibit the so-called stereotypical enrichment. Finally, both number-neutral plurals in Russian and number-neutral singulars in other languages exhibit obligatory narrowest scope and reduced ability to license discourse anaphora.

Following Dobrovie-Sorin et al. (2010), Rullman (2011), Kagan & Pereltsvaig (2011a,b), Pereltsvaig (2011a), I take bareness to be the central property of these nominals from which the others derive. Since these nominals lack functional structure, including the number projection, they exhibit semantic number-neutrality. The lack of determiners and other quantificational elements leads to the scopal deficiency and weak referentiality. And while bareness is a necessary condition for (morpho-)syntactic incorporation, it is obviously not a sufficient one; yet, it must be noted that number-neutral nominals (both plurals in Russian and singulars in other languages) are syntactically selected.

Given that the truly number-less (i.e. syntactically bare and semantically number-neutral) nominals in Russian are morphologically plural, I must conclude that apparently morphologically singular nominals appearing as complements to paucals in (1) are not numberless, contrary to Pesetsky's (2010) proposal.

### **3. Modifying adjectives and deadjectival nouns in Russian**

The second empirical challenge to Pesetsky's (2010) proposal on the syntax of paucals comes from modifying adjectives: as illustrated in (1c) above, they appear in the genitive plural rather than singular form and thus exhibit an apparent non-agreement with the nouns they modify (contrary to the typical situation in Russian whereby adjectives do agree with the nouns they modify).

Pesetsky proposes a syntactic analysis for this non-agreement pattern: according to him, modifying adjectives are merged syntactically higher than (i.e. outside the scope of) the paucal and thus escape being numberless, as is the case with the noun. The correct word order, where

the paucal precedes rather than follows the adjective, is achieved via syntactic movement of the paucal into D° and thus around the adjective.

While this analysis can be applied to modifying adjectives, it cannot be extended to the so-called deadjectival nouns, that is nouns from the adjectival declension, but which otherwise exhibit all the features of nominal syntax. In this section, I will consider such deadjectival nouns more closely.

Following Pereltsvaig (2001), and using the terminology of Borer & Roy (2005, 2010), I distinguish two types of deadjectival nouns: Noms(A) and Adj *pros*. The distinguishing feature of these two types of deadjectival nouns is whether they can be used to modify a noun at all: while Adj *pros* can do double duty as adjectives, Noms(A) cannot. The two types of deadjectival nouns are illustrated below:

(3) a. Noms(A):

gorničnaja ‘maid’	nasekomoe ‘insect’
lešij ‘goblin’	soxatyj ‘elk’ (lit. ‘horned’)
zodčij ‘architect’	zapjataja ‘comma’

b. Adj *pro*

beremennaja ‘pregnant (woman)’, glasnyj ‘vowel (sound)’, etc.

Like regular modifying adjectives, Noms(A) and Adj *pros* in complements of paucals appear in the plural: more specifically, masculine deadjectival nouns appear in the genitive plural form, as shown in (4), whereas feminine deadjectival nouns can appear either in the nominative plural or the genitive plural form (see Pereltsvaig 2011b), as shown in (5a-b). The example in (5c) shows that regular modifying adjectives occurring in paucal nominals with feminine nouns exhibit the same alternation between the nominative plural and the genitive plural forms.

(4) a.	tri lešix	b. tri glasnyx	{ <i>pro</i> /zvuka}
	three goblin <sub>GEN.PL</sub>	three vowel <sub>GEN.PL</sub>	sound <sub>GEN.SG</sub>
	‘three goblins’	‘three {vowels / vowel sounds}’	

(5) a.	tri {gorničn-ye	/	gorničn-yx}
	3 maid <sub>(FEM)-NOM.PL</sub>		maid <sub>(FEM)-GEN.PL</sub>
	‘three maids’		

- b. tri {beremenn-ye / beremenn -yx} *pro*  
 3 pregnant<sub>(FEM)-NOM.PL</sub> pregnant<sub>(FEM)-GEN.PL</sub>  
 ‘three pregnant (ones/women)’
- c. tri {vysok-ie / vysok-ix} gory  
 3 tall<sub>(FEM)-NOM.PL</sub> tall<sub>(FEM)-GEN.PL</sub> mountain<sub>(FEM)-GEN.SG</sub>  
 ‘three tall mountains’

Furthermore, there appears to be a certain statistical preference for the nominative plural over the genitive plural form for all three types of morphologically adjectival elements: Noms(A), Adj *pros* and modifying adjectives. A number of different survey and corpus studies show that approximately 70% of speakers prefer the nominative plural form, whereas only about 30% prefer the genitive plural form.<sup>2</sup> Moreover, the preference appears to be about the same for all three types of morphologically adjectival elements, as shown in Table 1 below.

**Table 1.** Preference for NOM.PL vs. GEN.PL with (de)adjectivals under paucals

Study [number of speakers]	NOM.PL	GEN.PL	GEN.SG
1. Noms(A), animate [85]	56.5%	43.5%	0%
2. Noms(A), inanimate [63]	69.8%	30.2%	0%
3. Adj <i>pro</i> , inanimate [61] <sup>3</sup>	48.4%	51.6%	0%
4. modifying adjectives [86]	70.9%	29.1%	0%
5. modifying adjectives, 2nd survey [64]	81.3%	18.8%	0%
6. Noms(A) & Adj <i>pro</i> , National Corpus	80%	20%	0%
7. <i>tri zapjat-</i> , Yandex (12-Apr-11)	76.1%	23.9%	0%
Average all studies	69%	31%	
Average discounting study #3	72.4%	27.6%	

<sup>2</sup> Space limitations do not allow me to describe the studies in great detail, but survey studies were based on either grammaticality judgments or preference tasks.

<sup>3</sup> There was a possible confusion with the masculine *pro*, which is why it is perhaps best to discount the study #3.

Note also that none of the studies found the genitive singular form of morphologically adjectival elements to be used in complements of paucal; thus, even those morphologically adjectival elements that are syntactically nouns (i.e. Noms(A)) do not appear in the same form as other, morphologically non-adjectival nouns. Thus, all elements with adjectival morphology (Noms(A), Adj *pros* and modifying adjectives) pattern the same way under paucals. However, only modifying adjectives can possibly be analyzed as being merged outside the scope of the paucal, as proposed by Pesetsky (2010); but his analysis cannot be extended to deadjectival nouns. Yet, these data also suggest a clue to a solution: since what modifying adjectives and deadjectival nouns have in common is their morphology rather than syntax, the analysis must be placed in the morphological component as well. Such morphological analysis is outlined in the following section.

#### 4. Proposal

Following Bailyn & Nevins (2008), Pereltsvaig (2011b), I take the genitive singular forms of nouns in (1a-b), as well as the plural forms of morphologically adjectival elements in (1c), (4) and (5), to be the morphological expression of [QUANT, PAUC] feature combination (rather than [GEN, SG], or [NOM, PL], [GEN, PL] etc.). Modulo a few lexical exceptions such as *šag* ‘step’, *šar* ‘sphere’ and others, the forms of the Quantitative/Quantificational case (cf. Bailyn 2004) are syncretic with those of the genitive (or, in some cases, the nominative) case. Furthermore, the morphological syncretism of the Paucal number forms with either singular or plural forms derives from certain diachronic developments that started already in the Old Russian period.

As is well known, Old Russian had a three-way number distinction: singular, dual and plural. However, already in the Old Russian period, starting in the 13th century (cf. Garbuzova 1975), the dual number as a grammatical category began undergoing a gradual erosion. First, dual number exhibit an increased homophony between forms: only three forms were morphologically distinct (i.e. non-syncretic) in the dual (cf. with the six morphologically distinct forms in the singular). Moreover, the various declension patterns were non-distinct in the dual. Furthermore, already in the 13th century manuscripts plural forms instead of the expected dual are found in contexts where the word for

‘two’ is not present, as in the following example from a 1219 manuscript, where the dative plural form *rabomъ svoimъ* ‘your slaves’ is used instead of the expected dative dual form *raboma svoima*:

- (6) pomogi **rabomъ**            **svoimъ**    Ioannu i Oleksiju  
 help    slave<sub>DAT.PL</sub>            self<sub>SDAT.PL</sub>    John and Alexey  
 ‘help your slaves John and Alexey’

The use of dual forms in the presence of ‘two’ has persisted, but the dual forms themselves have undergone a change whereby the syncretism between the nominative/accusative dual form and the genitive singular form, which originally obtained only in the masculine C-declension, was extended to other declensions, first to the neuter *o*-declension (which was already largely non-distinct from the masculine C-declension) and then to the feminine *a*-declension, the soft-C-declension, the *ŭ*-declension and the *i*-declension as well. Thus, the original nominative/accusative dual forms in the *o*-declension and the *a*-declension (with the ending *-b* in both declensions, e.g. *čisl-b* ‘numbers<sub>NOM/ACC.DU</sub>’, *žen-b* ‘women/wives<sub>NOM/ACC.DU</sub>’) were replaced by forms syncretic with the genitive singular (e.g. *čisl-a*, *žen-y*, respectively). Note that it was not the specific ending – the *-a* ending – that spread from the masculine C-declension to the other declensions, but the syncretism pattern itself: thus, the new nominative/accusative dual form for feminine *a*-declension nouns is *žen-y* rather than *žen-a*. Crucially, this syncretism pattern extended only to nominal but not to the adjectival declension (for reasons that will remain outside the scope of this paper). This is schematized in Table 2 below.

**Table 2.** Partial paradigm of two declensions in Old Russian

declension	SG		DU			PL
	NOM	GEN	NOM / ACC	G/L	D/I	NOM
C-	drug-ъ	drug-a	drug-a	drug-u	drug-oma	druz-i
<i>o</i> -	čisl-o	čisl-a	čisl-b → -a	čisl-u	čisl-oma	čisl-a
<i>a</i> -	žen-a	žen-y	žen-b → -y	žen-u	žen-ama	žen-y
Adj (F)	nov-aja	nov-yja	nov-Ei	nov-uju	nov-yima	nov-yja

### 5. How does diachrony fit with synchrony?

Given the diachronic nature of explanation proposed in this paper, a natural question arising next is how to fit diachrony with synchrony. After all, today's speakers of Russian need not be aware of the forms that were used some 800 years ago.

In accordance with the commonly adopted view on diachronic grammatical change, I take it to derive from two factors: inter-speaker variation and changing frequencies of various synchronically available forms. The inter-speaker variation can be encoded via different co-existing Lexical Insertion Rules. These rules can vary from speaker to speaker and the frequency across population may vary from time to time.

Following Bailyn & Nevins (2008), I adopt the following Lexical Insertion Rules for the different feature combinations:

- (7) a. [Adj, NOM, **FEM**, PAUC] = -ye  
 b. [Adj, NOM, **FEM**, PAUC] = -yx  
 c. [Adj, NOM, **MASC**, PAUC] = -yx  
 d. [Adj, NOM, **NEUT**, PAUC] = -yx

Note that rules (7a) and (7b) co-exist across the population of Russian speakers; however, specific speakers may use only one or the other of the two rules, or may prefer one rule over another; this is illustrated by the data in Table 1 above. It is also the case that the frequency of the two rules across the population has been shifting: the rule in (7b) used to be more common than it is now. In other words, the frequency of the rule in (7a) has been growing at the expense of that of the rule in (7b). Interesting, the hypothesis that the frequency of the rule in (7a) has been increasing is supported (if, admittedly, not very strongly) by the fact that the more recently conducted studies #2, 5, 6, 7 (see Table 1) show the higher frequency of the rule in (7a).

Regrettably, different lexical items have been used in the studies summarized in Table 1, so their results cannot be compared directly. However, since many of the same subjects participated in the various studies, it is still possible to compare their responses for the same classes of morphologically adjectival elements, and an interesting trend in shifting personal preferences emerges from this comparison. Specifically, a comparison of responses in studies #1 and 2, which

involve Noms(A), reveals that 12 participants switched their preferences from the *-yx* form to the *-ye* form, while only 5 participants made the reverse switch. Similarly, for the studies # 4 and 5, involving modifying adjectives, 13 participants switched from the *-yx* form to the *-ye* form, while only 4 made the reverse switch. Unfortunately, there is not enough of relevant data in the National Corpus of Russian to bear out the historical change: there are too few examples of the *-yx* forms spread over time.

To recap, I propose that there is a gradual ongoing change in the frequency of rules (7a) and (7b) across population of Russian speakers, with the former becoming more common at the expense of the latter. This goes against the claim in Borrás & Christian (1971) that the genitive plural *-yx* form of adjectives is spreading for **all** genders, including the feminine. This proposal also challenges the claim in Bailyn & Nevins (2008) about gender-neutralization in the plural (or [-singular], as they treat it).

#### 6. Is it all morphology (and not syntax)?

So far, I have presented the alternation of the two morphological forms – the *-ye* form and the *-yx* form – for feminine morphologically adjectival elements (i.e. modifying adjectives and deadjectival nouns) as a purely morphological matter. However, this may turn out to be a syntactic issue as well. As is well known and described in detail in Pereltsvaig (2006), a subject headed by a quantifier or a numeral may or may not trigger plural agreement on the verb; if the subject does not trigger plural agreement, the predicate appears in the 3<sup>rd</sup> person neuter default form:

- (8) a. V ètom fil'me **igrali** [pjat' izvestnyx aktërov].  
 in this film played<sub>PL</sub> five famous actors  
 'Five famous actors played in this film.'  
 b. V ètom fil'me **igralo** [pjat' izvestnyx aktërov].  
 in this film played<sub>NEUT</sub> five famous actors  
 'Five famous actors played in this film.'

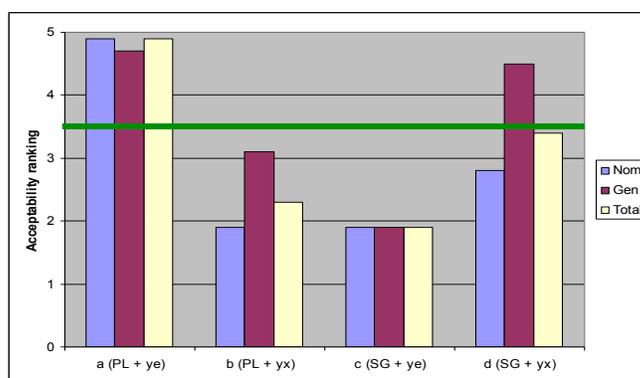
Given two two-way alternations (i.e. with/without plural agreement and the *-ye/-yx* forms), four possible combinations arise, listed in (9).

- (9) V ètom predloženíi ...  
 in this sentence

- a. propuščeny tri zapjatyē.  
omitted<sub>PL</sub> three comma<sub>NOM.PL</sub>
- b. propuščeny tri zapjatyx.  
omitted<sub>PL</sub> three comma<sub>GEN.PL</sub>
- c. propuščeno tri zapjatyē.  
omitted<sub>SG</sub> three comma<sub>NOM.PL</sub>
- d. propuščeno tri zapjatyx.  
omitted<sub>SG</sub> three comma<sub>GEN.PL</sub>

‘Three commas are omitted in this sentence.’

Previous literature has not addressed the issue of which of these are grammatical in Russian and which ones are not. In order to address this issue, I conducted another survey of native speakers, where they were asked to rank sentences in (9) on a scale from 1 (“really bad”) to 5 (“perfectly fine”); the results are presented graphically in Figure 1. Of the speakers who participated in the studies summarized in Table 1 above, only those who exhibited a clear preference for either the nominative/*-ye* form or the genitive/*-yx* form in non-subject contexts (i.e., in lists or for inanimate accusative object) were questioned. The results were tabulated accordingly: the first column is each of the four sets represents the average response from speakers who showed preference for the nominative/*-ye* form; the second column – the average response from speakers who showed preference for the genitive/*-yx* form; and the last column – the average from both groups. The horizontal line at 3.5 represents the grammaticality cut-off.



**Fig. 1.** Acceptability ranking for sentences in (9)

Several conclusions can be drawn from these results. First, all participants showed a clear preference for agreeing (over non-agreeing) subjects, even with inanimate subjects such as ‘three commas’: the average ranking of sentences with agreeing subjects is 3.55 (just above the grammaticality cut-off), while the average grammaticality of sentences with non-agreeing subjects is 2.65. This is in line with the findings in Graudina et al. (1976: 28), who indicate a slight preference for agreeing subjects (54% vs. 46%); though it appears that my results are somewhat sharper than what Graudina et al. describe. Second, speakers who prefer the genitive/*-yx* form elsewhere show a more marked preference for this form in the subject position as well; in fact, only speakers who prefer the genitive/*-yx* form elsewhere accept this form in the subject position at all (cf. the middle column in set d).

Third, and most importantly for our present purposes, with plural agreement (sets a and b), the nominative/*-ye* form is preferred (cf. set a vs. set b), whereas with default agreement (sets c and d), the nominative/*-yx* form is preferred (cf. set a vs. set b). This is true even for speakers who prefer the nominative/*-ye* form elsewhere: they too ranked non-agreeing *-yx* subjects higher than non-agreeing *-ye* subjects (2.8 vs. 1.9). This result cannot be explained away by a requirement for some overtly nominative morphological form since sentences like (10) are perfectly grammatical with the plural agreement and yet no nominative morphology on either the noun or the adjective in the complement of the numeral. In other words, if *sto narodnyx teatrov* ‘hundred of people’s theaters’ can trigger plural agreement on the predicate, why can’t subjects like *tri zapjatyx* ‘three commas’?

- (10) V dal’nix selenijax Kazaxstana rabotajut sto narodnyx teatrov.  
 in far-away villages Kazakhstan work<sub>PL</sub> 100 [people’s theater]<sub>GEN.PL</sub>  
 ‘In far-away villages of Kazakhstan there are 100 people’s theaters  
 working.’ (Graudina et al. 1976: 29)

Furthermore, if Pereltsvaig (2006) is correct, the agreeing subjects in (9a,b) are DPs, while the non-agreeing subjects in (9c,d) are mere QPs, this would mean that while both forms are simultaneously present in the language, they are mapped to different syntactic structures: *tri zapjatyje* is analyzed as a DP, whereas *tri zapjatyx* – as a QP. Why this is so is a question for future research.

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## **Paradigm Leveling in Non-Standard Russian**

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### **1. Introduction**

Paradigm leveling has been extensively studied in different linguistic traditions (e.g. Albright 2002, 2010; Anttila 1977; Benua 1997; Bybee 1985; Kiparsky 1982, 2002; Kuryłowicz 1949; Kenstowicz 1996; Mańczak 1958; McCarthy 2005; Steriade 2000). We analyze several leveling processes currently taking place in Russian, focusing on non-standard innovative verb forms. We show that leveling can simultaneously go in two opposite directions, but some innovations (involving underapplication rather than overapplication of alternations) are more frequent. We discuss examples of alternations that are unattested in standard Russian and examine different factors that influence leveling.

Unfortunately, Russian corpora contain almost no non-standard forms that we were interested in, so we had to look for them on the Internet. Estimating relative frequencies of different forms found there is a challenge because the counts provided by search engines are extremely unreliable. To circumvent this problem, we used the following strategy.

First we established what variants of a particular form are attested (an example is analyzed in section 2.2.1). Then we included all variants in one search, i.e. asked the search engine to look for them

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simultaneously. We sorted the results by date (if they are sorted by relevance, bigger sites, which tend to pay more attention to the literary norm, are given priority) and looked through all of them or through the first 1000, which is the maximum allowed by search engines. We excluded repeating or irrelevant hits by hand and counted different forms' frequencies.<sup>1</sup> If we found that a variant is attested, but it did not get into the search sample, it is mentioned separately. We always used the Yandex search engine ([www.yandex.ru](http://www.yandex.ru)).

Finally, let us present some basic facts about Russian verb system. Verbs have two main stems: the present/future tense stem and the past tense stem (also used in infinitives). Imperfective verbs have synthetic present forms and analytic future forms (*byt'* 'to be' + infinitive). Perfective verbs have synthetic future forms and no present forms.<sup>2</sup> Correlation between the two stems determines the verb class. Deriving one stem from the other may involve truncation or addition of the final consonant or vowel, stress shift and various alternations. There are several approaches to dividing verbs into classes. In this paper, we rely on the one developed by Roman Jakobson and his followers (e.g. Jakobson 1948; Townsend 1975). According to it, Russian has 23 verb classes (or 24 if so-called *B-verbs* are counted as a separate class) and several anomalous verbs.

## 2. Getting rid of consonant alternations

### 2.1 Historic consonant alternations in Russian

Russian has historic consonant alternations at the end of some stems. Diachronically, they result from several processes schematically shown in (1). To avoid confusion, we use transliteration rather than transcription throughout the paper, making additional comments wherever necessary.

- (1)  $g / k / x$  before front vowels =  $\check{z} / \check{c} / \check{s}$  (Slavic first palatalization) or  
 palatalized  $z / c / s$  (Slavic second palatalization)  
 $g / k / x + j = \check{z} / \check{c} / \check{s}$

<sup>1</sup> Under irrelevant hits we mean the obvious cases when a verb form that we were looking for coincided with some other form (say, a misspelled noun form) etc.

<sup>2</sup> Verbs are inflected for person and number in the present and future tenses and for number and gender (only in the singular) in the past tense because historically, past tense forms are participles that lost their auxiliary.

$d / t + j = \dot{z} / \dot{c}$  or  $\dot{z}d / \dot{s}\dot{c}$  (in the forms borrowed from Old Church Slavonic, or OCS, where  $d / t + j = \dot{z}d / \dot{s}t$ )  
 $z / s + j = \dot{z} / \dot{s}$   
 $b / p / v / m + j = bl / pl / vl / ml$  (with palatalized *l*)  
 $st / sk / kt / gt + j = \dot{c}$  or  $\dot{s}\dot{c}$  (in the forms borrowed from OCS)

These alternations were present in various inflectional paradigms and in derivation, but were subsequently lost in many cases. In nominal paradigms, they can now be seen only in several words with different singular and plural stems (e.g. *krjuk* ‘hook<sub>NOM.SG</sub>’ – *krjuka* ‘hook<sub>GEN.SG</sub>’ – *krjuč’ja* ‘hook<sub>NOM.PL</sub>’ – *krjuč’ev* ‘hook<sub>GEN.PL</sub>’) and in some frozen forms. The latter include archaic forms used in idiomatic expressions like (2) and several surviving Vocative forms like *bože* from *bog* ‘god’.

- (2) *počit’ v boze*  
 die<sub>INF</sub> in god<sub>LOC.SG</sub>  
 ‘to pass away’ (the form *boze* from *bog* is now replaced with *boge*)

Verbal paradigms in classes A, I, E and G-K retained consonant alternations in standard Russian. But, as we demonstrate in the following sections, these alternations are often omitted or distorted in non-standard examples. A cursory examination of the data suggests that the same is true for the suffixes associated with alternations in standard Russian: *-e* used to form comparatives from some adjectives and adverbs (e.g. *suxoj* ‘dry’ / *suxo* ‘dryly’ – *suše* ‘drier, more dryly’), *-enij-* deriving nouns that denote a process from verbs, diminutive or derogative *-ik-* etc. However, we do not discuss them in this paper.

## 2.2 Classes I and E

Classes I and E are morphologically similar, except for the thematic vowel at the end of the past tense stem. They have consonant alternations in the 1SG present/future form and in the passive past participle: e.g. *brosit’* ‘to throw’ – *brošu* ‘throw<sub>FUT.1SG</sub>’, *brosiš* ‘throw<sub>FUT.2SG</sub>’ etc. – *brošennyj* ‘thrown<sub>M.NOM.SG</sub>’.<sup>3</sup>

<sup>3</sup> Here and below, such claims do not apply to the stems that end in non-alternating consonants.

### 2.2.1 What can happen to alternations

Class I is the only productive class with alternations. A lot of novel verbs were added to it in the last decades. As we show in section 2.2.2, in this group of verbs problems with alternations are especially frequent. So let us take one of them, non-standard *zafrendit'* 'to include in one's friend list',<sup>4</sup> as an example to see what can happen to alternations.

The following 1SG future forms of this verb can be found on the Internet: *zafrenžu* with the standard *d // ž* alternation, *zafrenždu* with a *d // žd* alternation originally coming from OCS (see (1)), *zafrendju* lacking alternation and several variants with alternations unattested in standard Russian. Among them are *zafrendlju*, *zafrendžu*, *zafrenču*, *zafrendču*, *zafrendšu* and *zafrenšču*. These alternations (we will further call them "incorrect") result from the inappropriate use of epenthetic *l* (*d // dl*), adding the alternating consonant to the stem rather than replacing the final consonant by it (*d // dž*), choosing a wrong alternating consonant (*d // č*, *d // šč*) or the combination of two last strategies (*d // dč*, *d // dš*). Notably, three of these forms allow the speaker to kill two birds with one stone: to have an alternation and to keep the stem constant. Not to miss any variants, we looked for all possible combinations of alternating consonants, stem-final *d* and epenthetic *l*.

We also searched for passive past participle forms and found four variants mentioned in Table 1 below. After the list of possible variants was established, we estimated their relative frequency using the method described in the introduction. As Table 1 shows, some 1SG variants did not get into our corpus sample. Thus, we cannot make any conclusions about their frequency with respect to other forms, but it is clear that they are all very rare (only several occurrences of each were found).

Alternations	"Correct"	No alternation	"Incorrect"
1SG future form	599, 66.6% ( <i>zafrenžu</i> )	248, 27.6% ( <i>zafrendju</i> )	50, 5.6% ( <i>zafrendžu</i> ), 2, 0.2% ( <i>zafrendlju</i> )
Passive past participle	374, 74.5% ( <i>zafrenžennyj</i> )	85, 16.9% ( <i>zafrendennyj</i> )	36, 7.2% ( <i>zafrendžennyj</i> ), 7, 1.4% ( <i>zafrendlennyj</i> )

Table 1. The incidence of different forms from *zafrendit'*

<sup>4</sup> We chose a prefixed perfective verb because its passive past participle is more frequent. Here and below, we did not count so-called short forms of participles.

At the same time, we looked for examples of overapplication of alternations. To limit our search a little bit, we went through all possible consonant combinations for all finite forms (obviously, excluding the 1SG future form). The following variants of the stem are attested: *zafrendl-* (2SG, 3SG, 2PL future forms, M.SG, F.SG, PL past forms), *zafrenž-* (3SG, 2PL, 3PL future forms, M.SG, F.SG, PL past forms) and *zafrendž-* (2PL future form, M.SG, F.SG, PL past forms). However, even the most frequent of these variants, *zafrendlil* (M.SG past form), is very rare: only 27 occurrences were found. There were just a couple of occurrences of any future form. The corresponding variants without alternations are found on the Internet in thousands (in case of past forms) or hundreds (in case of future forms).

### 2.2.2 Factors influencing the distribution of alternations

We could identify the following factors that influence the distribution of alternations. Firstly, less frequent verbs lack alternations more often. Secondly, non-standard verbs have more forms without alternations. Thirdly, the degradation of alternations depends on the final consonant of the stem. More problems arise with stems ending in obstruent clusters, less problems with stems ending in labials, where the epenthetic *l* is used.

To assess the role of the first and third factors independently, we compiled three sets of novel non-standard I class verbs: 30 verbs with stems ending in labials, 14 verbs with stems ending in obstruent clusters and 38 other verbs. We took only unprefixated imperfective verbs. For a half of the verbs in every set, more than 100 1SG present forms were found on the Internet (we will call them “frequent”).<sup>5</sup>

We searched for 1SG forms of every verb with “correct” alternations and without them using the method described in the introduction. We counted variants, limiting ourselves to 100 first occurrences in case of the more frequent verbs. The results are shown in (3)–(5) and in Table 2. The first figure in parentheses is the number of forms with alternations.<sup>6</sup>

- (3) a. *farmit'* ‘to farm’ (100|0), *nubit'* ‘to noob’ (100|0), *folovit'* ‘to follow’ (99|1), *instagramit'* ‘to use Instagram’ (98|2), *strimit'* ‘to

<sup>5</sup> We took all such verbs we initially came up with and a matching number of less frequent verbs because they are easier to find. Our lists are not exhaustive, but rather full.

<sup>6</sup> Most verbs are related to English computer terminology and games (many of them are used despite the fact that there are analogues in literary Russian).

- stream' (98|2), *stopit'* 'to stop' (98|2), *program(m)it'* 'to program' (97|3), *zomit'* 'to zoom' (96|4), *spamit'* 'to spam' (96|4), *bekapit'* 'to back up' (95|5), *fotošopit'* 'to use Photoshop' (95|5), *offtopit'* 'to make off-topic comments' (92|8), *kreativit'* 'to do something creative' (92|8), *flejmit'* 'to flame' (71|29), *serfit'* 'to surf' (35|65)
- b. *dampit'* 'to dump' (89|6), *test-drajvit'* 'to do a test drive' (86|12), *tajmit'* 'to time' (74|5), *gejmit'* 'to game' (61|36), *tajpit'* 'to type' (48|14), *jutubit'* 'to use YouTube' (36|13), *skajpit'* 'to use Skype' (35|9), *šejpit'* 'to shape' (31|7), *karvit'* 'to carve' (29|4), *xelpit'* 'to help' (28|3), *panoramit'* 'to make panoramic pictures' (22|1), *dajvit'* 'to dive' (11|5), *èskejpit'* 'to escape' (9|1), *sejfit'* 'to save' (6|4), *zip(p)it'* 'to create .zip files' (5|1)
- (4) a. *krafit'* 'to craft' (84|16), *postit'* 'to post' (77|23), *konnektit'* 'to connect' (60|40), *fiksit'* 'to fix' (23|77), *kopipejstit'* 'to copy and paste' (14|86), *kapsit'* 'to use capital letters' (4|96), *jandeksit'* 'to use Yandex' (2|98)
- b. *skriptit'* 'to script' (23|30), *selektit'* 'to select' (17|40), *adaptit'* 'to adapt' (1|2), *pinoteksit'* 'to use Pinotex' (0|1), *faerfoksit'* 'to use Firefox' (0|2), *linuksit'* 'to use Linux' (0|2), *faksit'* 'to fax' (0|10)
- (5) a. *sabmitit'* 'to submit' (89|11), *rebutit'* 'to reboot' (88|12), *frendit'* 'to include in the friend list' (86|14), *invajtit'* 'to invite' (83|17), *kolbasit'* 'to to shake, kill etc.' (80|20), *fludit'* 'to flood' (79|21), *kommentit'* 'to comment' (75|25), *sapporit'* 'to support' (75|25), *kajtit'* 'to move constantly' (74|26), *kopirajtit'* 'to copyright' (61|39), *apdejtit'* 'to update' (60|40), *rejzit'* 'to raise' (55|45), *resetit'* 'to reset' (53|47), *apgrejdit'* 'to upgrade' (52|48), *rejdit'* 'to raid' (45|55), *trejdit'* 'to trade' (22|78), *brauzit'* 'to browse' (18|82), *frilansit'* 'to freelance' (9|91), *čatit'sja* 'to chat' (2|98)
- b. *foldit'* 'to fold' (26|21), *kompliit'* 'to complete' (26|7), *vardit'* 'to ward' (25|6), *splitit'* 'to split' (6|3), *skejtit'* 'to skate' (2|2), *daunlodit'* 'to download' (9|23), *deliit'* 'to delete' (6|53), *insertit'* 'to insert' (5|18), *printit'* 'to print' (4|19), *vikipedit'* 'to use Wikipedia' (4|27), *fajtit'* 'to fight' (2|9), *startit'* 'to start' (2|15), *odinèsit'* 'to use 1C (Russian accounting software)' (1|11), *snoubordit'* 'to snowboard' (1|17), *èkspendit'* 'to expand' (0|1), *lulzit'* 'to make fun' (0|2), *pejntit'* 'to paint' (0|2), *prezentit'* 'to present' (0|3), *čejzit'* 'to chase' (0|5)

Alternations	Labials		Obstruent clusters		Other stems	
	frequent	infrequent	frequent	infrequent	frequent	infrequent
Yes	1362, 90.8%	570, 82.5%	264, 37.7%	41, 32.0%	1106, 58.2%	119, 32.8%
No	138, 9.2%	121, 17.5%	436, 62.3%	87, 68.0%	794, 41.8%	244, 67.2%

Table 2. The incidence of 1SG forms with and without alternations

The difference between frequent and infrequent verbs is significant in the “labial” and “other stems” groups and on the whole ( $p < 0.002$  according to the chi-square test for all comparisons). The “obstruent cluster” group shows the same tendency as two others, but the difference between frequent and infrequent verbs does not reach significance. As for the role of the final consonant of the stem, the differences between any two groups are significant both if all verbs are counted and if only the frequent ones are taken ( $p < 0.001$  for all comparisons).<sup>7</sup>

It is also interesting to note how many verbs have more forms with alternations than without them. This is true for 29 out of 30 “labial” verbs and for 3 out of 14 “obstruent cluster” verbs. In the “other stem” group, it is true for 14 out of 19 frequent verbs and for 4 out of 19 infrequent verbs. The difference between these subgroups is significant ( $p = 0.003$  according to Fisher’s exact test), as well as the difference between “labial” and “other stem” verbs on the whole ( $p < 0.001$ ).

Let us add a couple of observations to this picture. Verbs with the stems ending in labials not only rarely lack alternations, but also almost never have “incorrect” ones, although singular examples like *offtopču* from *offtopit’* ‘to post off-topic comments’ can be found. The epenthetic *l* is sometimes added even to stems that end in non-alternating consonants: e.g. *banlju* from *banit’* ‘to ban’. Stems ending in obstruent clusters are characterized not only by numerous forms without alternations, but also by a particular diversity of “incorrect” alternations. For example, the following 1SG present forms from *postit’* ‘to post’ are attested: *pošču* (“correct” alternation), *postju* (no alternation), *postlju*, *poščšču* (“correct” alternation reduplicated), *posču* (“correct” alternation, but only for the second consonant), *posšu*, *posšču*, *postču*, *postšu*, *postšču*, *postsču*,

<sup>7</sup> The latter comparison is more appropriate because these groups are more balanced.

*poššču*, as well as *pošču* and *posšču* (where ‘šč’ is not one letter, but a combination of ‘š’ and ‘č’).

To show that non-standard verbs lack alternations more often, we compiled two sets of verbs ending in *-dit'* that differ according to this criterion. To match them in frequency, we took only the verbs that have 500–50000 occurrences of the 1SG present/future form on the Internet (this is a rough estimate because we did not look through these results). The first set in (6a) was selected from the database of Russian verbs ([www.slioussar.ru/verbdatabase.html](http://www.slioussar.ru/verbdatabase.html)).<sup>8</sup> The second one in (6b) was selected from novel verbs listed in (5a). Prefixed verbs were taken only if corresponding unprefixed ones are absent or very rare. We excluded verbs with homonyms, verbs marked as colloquial<sup>9</sup> and the cases where more than 50% forms lack alternations: two verbs with paradigm gaps from the first set (we return to such verbs below) and *trejdit'* ‘to trade’ from the second. *Trejdit'* has no special properties, we left it out for the symmetry (in any case, this biases the results against our hypothesis). We estimated the distribution of 1SG forms with and without alternations for all verbs in (6a-b) in the same way, as we did in (3)–(5) above.

- (6) a. *molodit'sja* ‘to try to look younger’ (60|40), *pogodit'* ‘to wait a little’ (75|25), *prigvozdit'* ‘to nail down’ (79|21), *vynudit'* ‘to force’ (82|18), *nasladit'sja* ‘to enjoy’ (89|11), *čadit'* ‘to emit fumes’ (90|10), *plodit'* ‘to produce’ (92|8), *gromozdit'* ‘to pile up’ (95|5), *oblagorodit'* ‘to ennoble’ (95|5), *učredit'* ‘to found’ (95|5), *xolodit'* ‘to freeze’ (95|5), *beredit'* ‘to irritate’ (96|4), *oxladit'* ‘to cool’ (96|4), *trudit'* ‘to load with work’ (96|4), *ščadit'* ‘to spare’ (96|4), *prudit'* ‘to pond’ (97|3), *stydit'* ‘to shame’ (97|3), *gorodit'* ‘to fence’ (98|2), *dosadit'* ‘to annoy’ (98|2), *ogradit'* ‘to guard’ (98|2), *snabdit'* ‘to supply’ (98|2), *solodit'* ‘to malt’ (98|2), *zarjadit'* ‘to load’ (99|1), *napomadit'* ‘to use lipstick, to pomade’ (99|1), *operedit'* ‘to pass ahead’ (99|1), *ostudit'* ‘to cool’ (99|1), *soorudit'* ‘to construct’ (99|1), *cedit'* ‘to strain’ (99|1), *narjadit'* ‘to dress up’ (100|0), *rjadit'* ‘to dress up, to ordain’ (100|0)

<sup>8</sup> It was created by Natalia Slioussar on the basis of “The grammatical dictionary of Russian” (Zaliznyak 1987) and contains more than 27000 verbs.

<sup>9</sup> All these verbs were derogative rather than non-standard in the same sense as the verbs in (3)–(5), so we did not consider including them in the second group.

- b. *frendit'* 'to include in the friend list' (86|14), *fludit'* 'to flood' (79|21), *apgrejdit'* 'to upgrade' (52|48)

In total, we found 2809 (93.6%) forms with alternations and 191 (6.4%) forms without them for the verbs in (6a) and 217 (72.3%) and 83 (27.7%) for the verbs in (6b). The difference is significant ( $p < 0.001$  according to the chi-square test). However, the verbs in (6a) appear in many contexts from where the verbs in (6b) are excluded, in particular in books, mass media articles and other texts that undergo proofreading. To compare two groups in the same contexts, we searched for documents that include a form of any verb from (6a) with correct alternation and a form of any verb from (6b) without it, and vice versa. We found 66 documents of the first type and 27 documents of the second type. The difference is significant ( $p < 0.001$  according to the chi-square test).

A different example of nonstandardness comes from a group of verbs that have no normative 1SG present/future form. Synchronically, they do not have any properties that can be held responsible for the paradigm gap, but Baerman (2008) identifies potential diachronic causes. A computational model is suggested in (Daland et al. 2007). We can add that if 1SG forms from these verbs are used nevertheless, they often lack alternations. An example is given in Table 3 (the proportion of alternations correlates with the relative acceptability of 1SG forms).

Alternation in 1SG future form	Yes	No
<i>ubedit'</i> 'to persuade'	348, 44.6%	433, 55.4%
<i>ubedit'sja</i> 'to become persuaded'	658, 70.4%	277, 29.6%
<i>razubedit'</i> 'to dissuade'	373, 82.5%	79, 17.5%

Table 3. The incidence of different forms from *ubedit'* and its derivatives

We also checked whether there would be more problems with alternations in the 1SG forms than in the passive past participles. When we simply searched for variants with and without alternations, the difference was significant for the verbs not ending in labials. Then we realized that there is a confounding factor: participles are more characteristic for less colloquial contexts. When we tried to search for 1SG and participle forms in the same documents, no tendency could be discerned. Therefore, we will refrain from any conclusions.

Finally, let us note that we did not mention E class verbs in this section. They behave as similar verbs from I class. Class E is not productive and includes only 45 unprefixated verbs, so it is less interesting to look at: different factors affecting alternations cannot be teased apart.

### 2.3 Class G-K

The complicated pattern of alternations in class G-K is shown in Table 4.

Infinitive		<i>žec'</i> 'to burn'	<i>peč'</i> 'to bake'
Past tense (M.SG and F.SG forms)		<i>žëg, žgla...</i>	<i>pëk, pekla...</i>
Present tense	1SG	<i>žgu</i>	<i>peku</i>
	2SG	<i>žžëš</i>	<i>pečëš</i>
	3SG	<i>žžët</i>	<i>pečët</i>
	1PL	<i>žžëm</i>	<i>pečëm</i>
	2PL	<i>žžëte</i>	<i>pečëte</i>
	3PL	<i>žgut</i>	<i>pekut</i>
Imperative	2SG	<i>žgi</i>	<i>peki</i>
	2PL	<i>žgite</i>	<i>pekite</i>
Active present participle		<i>žguščij</i>	<i>pekuščij</i>
Passive present participle		-	<i>pekomyj</i>
Active past participle		<i>žegšij</i>	<i>pekšij</i>
Passive past participle		<i>žžënyj</i>	<i>pečënyj</i>

Table 4. Conjugation of some G-K class verbs

This class is not productive and contains only 19 unprefixated verbs. *č* in the infinitive results from fusion of *g* or *k* with the infinitival suffix, so *g // č* is not a regular alternation in Russian, it can be found only in these forms. Interestingly, all G-K verbs, including highly frequent ones, are to a certain extent affected by the degradation of alternations (frequent I and E verbs are virtually intact). Non-standard paradigm leveling goes in two opposite directions. To show that underapplication of alternations is more frequent than overapplication we did the following.

We took 14 G-K verbs listed in (7), one verb per root. Three verbs historically derived from *moč'* 'to be able to', *peč'sja* 'to take care of' and *voloč'* 'to drag' were excluded (the last two due to inevitable confusion with *peč'sja* 'to be baked' and *voločit'* 'to drag'). For every verb, we searched for 3SG and 3PL forms with alternations and without

them using the method described in the introduction. In both cases, we looked through the first 1000 occurrences. The numbers of 3SG forms lacking alternations and of 3PL forms with incorrectly added alternations are given in parentheses.

- (7) *sžeč'* 'to burn' (67|0), *vyseč'* 'to whip, to carve' (29|1), *izreč'* 'to utter' (22|0), *zaprjač'* 'to harness' (20|1), *strič'* 'to cut, to clip' (18|0), *peč'* 'to bake' (12|0), *zavleč'* 'to entice' (11|0), *podstereč'* 'to waylay' (9|0), *teč'* 'to flow' (8|0), *bereč'* 'to spare' (6|0), *obleč'* 'to clothe, to cover' (4|0), *obreč'* 'to doom' (4|1), *smoč'* 'to be able to' (0|0), *prenebreč'* 'to neglect' (0|1)

No incorrect forms of *smoč'* 'to be able to' appeared in our samples, although in general they are attested. For 12 out of the other 13 verbs underapplication is more frequent than overapplication. This difference is significant ( $p=0.001$  according to the chi-square test). In total, we found 210 examples of underapplication and 5 examples of overapplication. For 11 out of 12 verbs, there is a significant difference between the number of forms involving underapplication and overapplication ( $p<0.05$  according to the chi-square test for all comparisons).

#### 2.4 Class A

Class A has alternations in all present/future forms and in the active present participle: e.g. *pisat'* 'to write' – *pišu* 'write<sub>PRS.1SG</sub>', *pišeš* 'write<sub>PRS.2SG</sub>' etc. – *pišuščij* 'writing'. This is a non-productive class with 91 unprefixated verbs. A verbs rarely lack alternations.

However, a different process is at work. In the course of last centuries, about 30 unprefixated verbs and their derivatives developed parallel present/future forms derived according to productive models (AJ class, with a couple of exceptions) and got rid of consonant alternations as a result. In some verbs, like *stradat'* 'to suffer', the old forms became archaic: e.g. the 1SG form *straždu* is now replaced by *stradaju*. In some others, like *maxat'* 'to wave', the new forms are listed in dictionaries, but still dispreferred. A number of verbs, like *prjatat'* 'to hide', did not develop new forms at all. And yet in the others the meanings of old and new forms diverged: e.g. the new forms from *dvigat'* 'to move' denote physical movement, while the old ones are used to describe motives.

Various factors affecting the distribution of different forms are studied in detail (e.g. Graudina et al. 1976; Nessel 2010; Nessel & Janda 2010; Nessel & Kuznestova 2011; Shvedova, ed., 1982), so we will not discuss them here. We can add that we found non-standard forms like *bormočal* ‘mumble<sub>PST.M.SG</sub>’ or *bormočavšij* ‘mumbling<sub>PST</sub>’ (instead of *bormotal*, *bormotavšij*). Thus, this is another case when two opposing processes, reanalysis according to a productive class model that leads to the loss of alternations and overapplication of alternations, coexist.

According to (Shvedova, ed., 1982), three non-prefixed I class verbs, *ezdit* ‘to go, to drive’, *lazit* ‘to climb’ and *elozit* ‘to fidget’ have non-standard forms derived according to the IJ class model. These forms lack alternations: e.g. *ezdiju* ‘g<sub>PRS.1SG</sub>’ instead of *ezžu*.<sup>10</sup> Similar forms from non-standard I class verbs also exist, but are very rare: e.g. *zafrendiju* from *zafrendit* ‘to include in the friend list’ discussed in section 2.2.1. Otherwise, verbs from classes I, E and G-K do not undergo class shifts.

### 3. Other leveling processes

This section contains a cursory description of two other paradigm leveling processes affecting Russian verbs.

#### 3.1 Getting rid of inconsistent stress patterns

The stress patterns of Russian verbs in the present/future tense and in the past tense are illustrated in Table 5 on the examples of *délat* ‘to do’, *trjasti* ‘to shake’, *pisat* ‘to write’ and *sorvat* ‘to pluck’. In *a* patterns, the stress falls on the stem, in *b* patterns, it falls on the endings (with the exception of zero endings), and *c* patterns are mixed.

Present/future tense				Past tense			
	a	b	c		a	b	c
INF	<i>délat</i> '	<i>trjastí</i>	<i>pisát</i> '	INF	<i>délat</i> '	<i>trjastí</i>	<i>sorvát</i> '
1SG	<i>délaju</i>	<i>trjasú</i>	<i>pišú</i>	M.SG	<i>délal</i>	<i>trjás</i>	<i>sorvál</i>
2SG	<i>délaeš</i> '	<i>trjasés</i> '	<i>píšeš</i> '	F.SG	<i>délala</i>	<i>trjaslá</i>	<i>sorvalá</i>
3SG	<i>délaet</i>	<i>trjasét</i>	<i>píset</i>	N.SG	<i>délalo</i>	<i>trjasló</i>	<i>sorválo</i>
1PL	<i>délaem</i>	<i>trjasém</i>	<i>píšem</i>	PL	<i>délali</i>	<i>trjaslí</i>	<i>sorváli</i>
2PL	<i>délaete</i>	<i>trjaséte</i>	<i>píšete</i>				
3PL	<i>délajut</i>	<i>trjasút</i>	<i>píšut</i>				

Table 5. Stress patterns of Russian verbs

<sup>10</sup> In standard Russian, only two unprefixated verbs belong to IJ class.

According to the database of Russian verbs mentioned above (www.slioussar.ru/verbdatabase.html), all three patterns are considerably frequent in the present/future forms. However, in the past forms, the *b* and *c* patterns are realized only in a small number of verbs from several non-productive classes. Almost all verbs in the *c* stress pattern have a non-standard F.SG form with the stress on the stem, as in all other past forms: e.g. *sorvála* instead of *sorvalá*. Some verbs also have a N.SG form with the stress on the ending: e.g. *sorvaló* instead of *sorválo*. Most of these forms are non-standard (Dobrushina 2011).

Verbs with the reflexive postfix *-sja* have the same stress patterns as other verbs except for *c* pattern in the past tense. Consider past forms from *sorvát'sja* 'to break loose': *sorválsja* and archaic *sorvalsjá*, *sorvalás'* and non-standard *sorválas'*, *sorvalós'* and *sorválos'* (both are normative), *sorvalís'* and *sorválís'* (Zaliznjak (1987) lists both forms as acceptable, while most dictionaries give only the first one). Presumably, this variation is also triggered by paradigm leveling.

### 3.2 Getting rid of suffix alternations

NU and (NU) verb classes have suffix alternations illustrated in Table 6 on the example of *tolknut'* 'to push' and *oslepnut'* 'to become blind'.<sup>11</sup>

	Infinitive	Past tense	Future tense
NU-class	<i>tolknut'</i>	<i>tolknul, tolknula...</i>	<i>tolknu, tolkneš'...</i>
(NU)-class	<i>oslepnut'</i>	<i>oslep, oslepla...</i>	<i>oslepnu, oslepneš'...</i>

Table 6. NU and (NU) verb classes

Class NU is productive, and class (NU) is not. Many (NU) verbs undergo leveling. Most often, *nu* is inserted in the past forms. About 40 unprefixated verbs and their derivatives are affected: e.g. *pomerknul* instead of *pomerk* from *pomerknut'* 'to dim, to fade'. At the same time, other verbs developed infinitive variants without *nu*: e.g. *dostič'* instead of *dostignut'* 'to achieve', *styt'* instead of *stynut'* 'to cool down'. This is discussed in (e.g. Graudina 1980; Shvedova, ed., 1982; Nessel & Makarova, 2012).

<sup>11</sup> Class (NU) contains two groups of verbs: in the first one, *nu* is absent more often than in the second one (active past participles can be taken as an example: e.g. *oslepšij* from *oslepnut'* 'to become blind' vs. *svergnuvšij* from *svergnut'* 'to dethrone').

We can make the following contribution to this discussion. Infinitive variants like *dostič'* 'to achieve' and *voskresti* or *voskrest'* 'to resurrect' resemble G-K class verbs like *bereč'* 'to protect' and Z-S class verbs like *nesti* 'to carry'. On the Internet we could find singular examples of future forms derived according to these models: e.g. 3SG forms *dostigët* or *dostižët* instead of *dostignet*, *voskresët* instead of *voskresnet*.

#### 4. Conclusions

In this paper, we discussed several paradigm leveling processes that affect Russian verbs, focusing primarily on the fate of historic consonant alternations. We analyzed innovative non-standard forms from different verbs and showed that often, leveling simultaneously goes in two opposite directions. However, some innovations are more frequent than the others. We observed that underapplication of consonant alternations is more widespread than overapplication and discussed this problem in detail for G-K verb class, where numerous non-standard examples of both types can be found. Although the present/future paradigm of G-K verbs includes four forms with alternations and two forms without them, innovative present/future forms lacking alternations prevail dramatically.

Studying various verbs from class I we demonstrated that leveling is influenced by the following factors. Firstly, less frequent verbs lack alternations more often. Secondly, non-standard verbs have more forms without alternations. Thirdly, the proportion of forms lacking alternations is the highest for stems ending in obstruent clusters and the lowest for the stems ending in labials (where the epenthetic *l* is standardly used).

As we noted in the introduction, many competing approaches to paradigm leveling exist. But we are cautious to interpret our results in favor of any theory. For example, the fact that underapplication of alternations is preferred to overapplication is problematic for McCarthy's (2005) framework, being more readily compatible with accounts like (Albright 2002, 2010). However, these and other theories were primarily designed to work with different data, explaining why some groups of words developed particular established forms rather than predicting different frequencies of various non-standard innovations. We strongly believe that the general principles should be the same in both cases, but some adaptation is still needed, and we leave this for further research.

To give another example, alternations that are unattested in standard Russian can be taken as evidence that speakers, at least in some cases, rely on conditions on outputs (form X should contain consonant A) rather than on input-output relations (stem-final consonant B becomes A in form X) (e.g. Bybee 1995). However, this does not readily predict the vast diversity of such alternations, as well as their very low frequency compared not only to “standard” alternations, but also to the cases where alternations are missing. These facts still await their explanation.

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## **Inferences about the Future: A Gap in the Evidential Paradigm in Bulgarian**

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### **1. Reportative and inferential meaning of the Bulgarian evidential**

Bulgarian has a designated morphological paradigm that expresses evidential meaning. The same evidential form can express either an inferential or a reportative information source, depending on the context. For example, the evidential form *valjalo* ‘rain’ in (1) expresses that the speaker’s source of information is a report. The same form in (2) signals that the speaker’s information source is an inference.<sup>1,2</sup>

- (1) Reportative context: Maria told you over the phone that it rained in Chicago last night. When your mom asks you what the weather was like in Chicago last night, you say:

Valjalo.  
rain<sub>IMPERF.PAST.PLE</sub>  
‘It rained, [I heard].’

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<sup>1</sup>Glosses: EM=Emphatic marker, FEM=Feminine gender, IMPERF=Imperfective Aspect, NEG=Negation, PAST=Past tense, PERF=Perfective aspect, PL=Plural, PLE=Participle, PRES=Present tense, SG=Singular, , SUBJ= Subjunctive marker.

<sup>2</sup> An anonymous reviewer pointed out that for some speakers the inferential evidential context requires the presence of the auxiliary verb in the 3<sup>rd</sup> person singular and plural (cf. *e valjalo* ‘rain’ for (2)). In this paper, I focus on the standard dialect, in which evidential forms lack the auxiliary verb in both reportative and inferential contexts. See Friedman (1982) for a detailed discussion of the variation.

- (2) Inferential context: You just arrived at your home town. The river is overflowing. You inferred that it rained last night. Maria calls you on the phone and asks you what the weather was like last night. You say:

Valjalo.

rain<sub>IMPERF.PAST.PLE</sub>  
‘It rained, [I inferred].’

What went unnoticed in the previous formal literature is that in Bulgarian the availability of the reportative and the inferential interpretation is contingent on the temporal reference of the evidential. Specifically, both the reportative and the inferential interpretation are possible if the eventuality denoted by the evidential occurred in the past. Thus, in both (1) and (2) the raining occurred last night. However, if the eventuality denoted by the evidential is future, only the reportative interpretation is possible; the inferential evidential meaning is no longer available. Thus, in the reportative context in (3), the future evidential form *štjalo da vali* ‘will rain’ locates the raining eventuality at some future time, i.e. tonight. However, the same form cannot be felicitously used in the inferential context (4a). In order to express an inference about the future event, the construction with the epistemic modal *trjabva* ‘must’ must be used (4b).

- (3) Reportative context: According to the weather forecast that you heard an hour ago, it is supposed to rain this evening. Your friend is planning a picnic in the evening. When she wonders about the weather, you say:

Štjalo da vali           dovečera.  
will<sub>PLE</sub> SUBJ rain<sub>IMPERF.3SG</sub> tonight  
‘It will rain tonight, [I heard].’

- (4) Inferential context: When you looked at the sky an hour ago, it was cloudy. You inferred that it would rain tonight. Your friend is planning a picnic in the evening. When she wonders about the weather, you say:

a. # Štjalo da vali           dovečera.           [Evidential]  
will<sub>PLE</sub> SUBJ rain<sub>IMPERF.3SG</sub> tonight  
Intended: ‘It will rain tonight, [I inferred].’

- b. Trjabva da vali dovečera. [Epistemic modal]  
 must<sub>PRES SUBJ</sub> rain<sub>IMPERF.3SG</sub> tonight.  
 ‘In all probability it will rain tonight.’

The data in (1) – (4) raise important theoretical questions: (i) What temporal information does the evidential encode and why inferences about the future are blocked? (ii) What is the difference between the evidential and the epistemic modal ((4a) vs. (4b))? (iii) Is a uniform analysis of the evidential construction possible, given the differences in the availability of the reportative and the inferential interpretation ((3) vs. (4a))? These questions have cross-linguistic validity because the Bulgarian evidential is not unique in blocking inferential meaning in contexts with the future time reference. In fact, all other Balkan languages that grammatically encode evidentiality show the same phenomenon (cf. Newmark et al. 1982 on Albanian, Aksu-Koç and Slobin 1986:163 on Turkish, Friedman 2005:27 on Macedonian).

In the rest of the paper, I address the questions raised above. The paper is structured as follows. Section 2 discusses the evidential paradigm in Bulgarian. In sections 3 and 4, I show that the Bulgarian evidential has a temporal and a modal component, respectively. Section 5 presents a formal analysis of the evidential. Section 6 explains the gap in the evidential paradigm in Bulgarian. Section 7 is the conclusion.

## 2. The structure and the form of the evidential paradigm

Bulgarian has a designated morphological paradigm that expresses evidential meaning (cf. Scatton 1993). For each tense form in the indicative paradigm, there is a form in the evidential paradigm, as Table 1 shows for the verb *piša* ‘write’ (3<sup>rd</sup> person singular, feminine form).

	Indicative paradigm	Evidential paradigm
Present	<i>piše-Ø</i> write <sub>IMPERF-3SG.PRES</sub>	<i>piše-l-a</i> write <sub>IMPERF.PRES-PLE-FEM</sub>
Past	<i>pisa-Ø</i> write <sub>IMPERF-3SG.PAST</sub>	<i>pisa-l-a</i> write <sub>IMPRF.PAST-PLE-FEM</sub>
Future	<i>šte piše-Ø</i> will write <sub>IMPERF-3SG</sub>	<i>štja-l-a da piše-Ø</i> will <sub>PLE-FEM SUBJ</sub> write <sub>IMPERF-3SG</sub>

TABLE 1: *The indicative and the evidential paradigms*

Morphologically, evidential forms are participles: they bear participial morpheme *-l-*, realized on the verb in the present form (*piše-l-*) and in the past form (*pisa-l-*), but on the auxiliary verb in the future form (*štja-l-* ‘will’). Evidential forms bear aspectual morphology (imperfective in the case of *piša*), and have morphologically distinct stems for the present (*piše-*) and for the past (*pisa-*). The future is expressed analytically by the future form *štja-l-* ‘will’ plus the subjunctive form of the verb.

In the next section, I analyze the temporal meaning of the evidential.

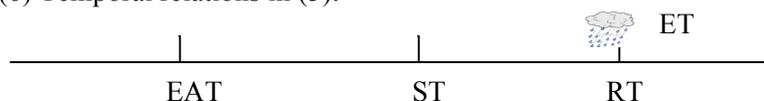
### 3. Temporal meaning of the Bulgarian evidential

I assume the standard (neo-)Reichenbachian framework (Klein 1994), and employ the three temporal parameters, i.e. Event Time (ET), Reference Time (RT), and Speech Time (ST) for the analysis of temporal relations in the Bulgarian evidential. In addition, I enrich the temporal ontology with the Evidence Acquisition Time (EAT), i.e. a time at which the speaker acquires the relevant evidence for the proposition she reports (Lee 2011). Consider the temporal meaning of the evidential sentence in (5), represented in (6). In (5), EAT is the time at which the speaker acquires reportative evidence, i.e. the time at which she hears the weather forecast. EAT temporally precedes ST. The RT in (5) is ‘tonight’. Thus, RT is future with respect to ST. The question for the semantic analysis is how to derive the temporal meaning of the evidential compositionally.

(5) Reportative context: According to the weather forecast that you heard an hour ago, it will rain this evening. Your friend is planning a picnic in the evening. When she wonders about the weather, you say:

Štjalo da vali           dovečera.  
will<sub>PLE</sub> subj rain<sub>IMPERF 3SG</sub> tonight  
‘It will rain tonight, [I heard].’

(6) Temporal relations in (5):



In what follows, I argue that the temporal meaning expressed by

evidential sentences is derived compositionally from the semantic contribution of the three components: the evidential operator, evidential tense, and grammatical aspect. I argue that these grammatical elements encode the temporal relations between times as shown in Table 2.

Grammatical Component	Evidential	Tense	Aspect
Encodes relation between...	ST and EAT	EAT and RT	RT and ET

TABLE 2: *Temporal relations in the evidential construction*

### 3.1 Temporal contribution of grammatical aspect

I assume that grammatical aspect encodes the relation between RT and ET (cf. Klein 1994). The imperfective presents eventuality as ongoing at a contextually salient RT ( $RT \subseteq ET$ ), while the perfective presents the eventuality as contained within RT ( $ET \subset RT$ ). The examples in (7) provide support for this analysis. The imperfective evidential form *pisala* ‘write’ is felicitous only if the book writing event is ongoing at  $RT =$  ‘last year’ (7a), while the perfective evidential *na-pisala* ‘write’ is only felicitous in the context that presents the eventuality in its totality (7b).

(7) Reportative context: Last month Ivan told you that Maria spent last year writing a book, and that the book has just been published.

a. Someone asks you what Maria was doing last year. You say:

Maria *pisala* /# *na-pisala* *kniga*.  
 Maria *write*<sub>IMPERF.PAST.PLE</sub> / *PERF-write*<sub>PAST.PLE</sub> *book*  
 ‘Maria was writing a book, [I heard].’

b. Someone asks you what Maria accomplished last year. You say:

Maria *na-pisala* /# *pisala* *kniga*.  
 Maria *PERF-write*<sub>PAST.PLE</sub> / *write*<sub>IMPERF.PAST.PLE</sub> *book*  
 ‘Maria wrote a book, [I heard].’

### 3.2 Temporal contribution of Evidential Tense

Within the Reichenbachian framework (cf. Klein 1994), tense encodes the relation between RT and the time of evaluation. If the tense is *absolute*, the time of evaluation is ST (cf. matrix clause tense). If the tense is *relative*, the time of evaluation is some other contextually relevant time. Tenses embedded under propositional attitude (PA) verbs are relative; they are interpreted not with respect to ST but with respect

to the ET of the matrix PA verb (Ogihara 1996, Abusch 1997). In this section, I argue that the evidential tense in Bulgarian is relative and that it encodes the relation between RT and EAT.

There are two pieces of evidence that support this analysis. The first piece of evidence concerns the distribution of the forms *pišela* ‘write’ (morphologically a present stem participle) and *pisala* (morphologically a past stem participle). The past stem evidential *pisala* is felicitous only if RT precedes EAT (RT < EAT), as in (8) and (9), while the present stem evidential *pišela* is felicitous only if EAT and RT coincide (EAT = RT), as in (10) and (11). Note that in all examples below, RT is located in the past with respect to ST. If the evidential tense was absolute, i.e. if it specified the relation between RT and ST, only the past stem evidential *pisala* ‘write’ would have been felicitous in (8) – (11). Instead, we find that the distribution of *pisala* and *pišela* ‘write’ depends on how RT is located with respect to EAT, which supports the relative tense analysis.

(8) Reportative context (RT < EAT): Last month Ivan told you that Maria spent last year writing a book, and that the book has just been published. Today, your old friend asks you what Maria was doing last year. You say:

Maria *pisala* / # *pišela* kniga.  
 Maria write<sub>IMPERF.PAST.PLE</sub> / write<sub>IMPERF.PRES.PLE</sub> book  
 ‘Maria was writing a book, [I heard].’

(9) Inferential context (RT < EAT): Your late aunt Maria spent two last months of her life in Paris. No one knows why. After the funeral, you found a first chapter of an unauthored manuscript about Paris in Maria’s papers. You inferred that Maria was writing a book. When one of the relatives asks you how Maria spent the last months of her life, you say:

Maria *pisala* / # *pišela* kniga.  
 Maria write<sub>IMPERF.PAST.PLE</sub> / write<sub>IMPERF.PRES.PLE</sub> book  
 ‘Maria was writing a book, [I inferred].’

(10) Reportative context (RT = EAT): Last month at the class reunion Ivan told you that Maria is busy writing a book. Today, a friend asks you what kept Maria from coming to the class reunion last month. You say:

Maria pišela / # pisala kniga.  
 Maria write<sub>IMPERF.PRES.PLE</sub> / write<sub>IMPERF.PAST.PLE</sub> book  
 ‘Maria was writing a book [I heard].’

(11) Inferential context (RT = EAT): You are hosting a party at your house. Your roommate Maria promised to be at the party, but she is not here. When you check Maria’s calendar, you inferred that right now she is sitting in the library and writing her book. A week later, when a friend of yours asks you why Maria didn’t show up at the party, you say:

Maria pišela / # pisala kniga.  
 Maria write<sub>IMPERF.PRES.PLE</sub> / write<sub>IMPERF.PAST.PLE</sub> book  
 ‘Maria was writing a book, [I inferred].’

Second, the relative tense analysis is supported by the distribution of future evidential forms. In (12), the eventuality of Maria’s book writing is future with respect to EAT but past with respect to ST. If the evidential tense was absolute, the future form would be infelicitous in (12).

(12) Reportative context (EAT < RT < ST): In the morning, Ivan told you that Maria would spend the afternoon writing a portion of her book. In the evening, when your friend asks you what Maria was doing in the afternoon, you say:<sup>3</sup>

Maria štjala da piše kniga.  
 Maria will<sub>PLE SUBJ</sub> write<sub>IMPERF.3SG</sub> book.  
 Lit: ‘Maria would be writing a book, [I heard].’

Note that the inferential equivalent of (12) is still infelicitous:

(13) Inferential context (EAT < RT < ST): In the morning, you looked at Maria’s planner and inferred that she would spend the afternoon writing a portion of her book. In the evening, when your friend asks you what Maria was doing in the afternoon, you say:

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<sup>3</sup> For some speakers, this example reads better in a counterfactual context, i.e. if at the time of speech the speaker knows that Maria didn’t write her book in the afternoon.

# Maria štjala da piše kniga.  
 Maria will<sub>PLE SUBJ</sub> write<sub>IMPERF.3SG</sub> book.  
 ‘[I heard] that Maria would be writing a book.’

Thus, the evidential cannot express inferences about the future even in contexts when the eventuality denoted by the evidential is past with respect to ST (but future with respect to EAT). I return to the question of why the future inferential interpretation is blocked in section 6.

### 3.3 Temporal contribution of the Evidential Operator

In order to use the evidential construction felicitously, the speaker must acquire the relevant evidence first. I assume that the Bulgarian evidential encodes that EAT precedes ST ( $EAT < ST$ ), i.e. the speaker first acquires the evidence and then reports it in the conversation.

### 3.4 Summary: Temporal analysis of the evidential

The proposed analysis explains the temporal meaning of (14) as follows.

(14) Reportative context: same as in (5):

Štjalo da vali dovečera.  
 will<sub>PLE SUBJ</sub> rain<sub>IMPERF.3SG</sub> tonight  
 ‘It will rain tonight, [I heard].’

The imperfective aspect specifies that the ET of raining is ongoing at the RT, i.e. ( $RT \subseteq ET$ ). The future tense locates RT, and, consequently, ET in the future with respect to EAT ( $EAT < RT$ ). The evidential operator encodes that EAT precedes ST ( $EAT < ST$ ). From ( $EAT < RT$ ) and ( $EAT < ST$ ) it follows that RT, and, consequently, ET can be located either in the future of ST ( $ST < RT$ ) or in the past of ST ( $ST < RT$ ). In the context in (14), the temporal adverb ‘tonight’ locates RT in the future of ST, but the past temporal relation ( $RT < ST$ ) is also possible, given the appropriate context (cf. 12). The proposed analysis is flexible enough to account for the relative meaning of the future evidential, and it also captures the intuition that the evidential enables speakers to understand how ET is located with respect to both ST and EAT.

### 3.5 Comparison with Koev’s (2011) temporal analysis

Similarly to the analysis presented here, Koev’s temporal analysis

assumes the four temporal parameters, i.e. RT, ET, ST, and EAT.<sup>4</sup> However, our temporal analyses radically differ with respect to how the labor is allocated between different components of the evidential construction, as shown in Table 3.

	Current analysis	Koev (2011)
ET to RT is coded by	Aspect	Aspect
RT to EAT is coded by	Evidential tense	Evid. operators (DIR/IND)
EAT to ST is coded by	Evidential operator	LEARN operator
RT to ST is coded by	N/A	Tense

TABLE 3: *Comparison between the current analysis and Koev 2011*

Koev assumes that there are four temporal operators that encode relations between times in the evidential construction: Aspect, Evidential operator (DIR for direct evidentiality, IND for indirect evidentiality), LEARN operator, and Tense. The crucial difference between the analysis proposed here and Koev's analysis is that in the latter there is a grammatical operator that explicitly encodes the relation between RT and ST (Tense). In my analysis, the relation between RT and ST is entailed from the meaning of the evidential tense and the evidential operator, as I showed in 3.4. Thus, the same phenomenon is explained with a smaller number of operators. Moreover, Koev's assumption that tense is absolute – tense encodes the relation between RT and ST in his analysis – makes a number of incorrect predictions. First, it predicts the present evidential *pišela* 'write' to be infelicitous in contexts when RT precedes ST, but see (10) and (11), and second, it predicts that the future evidential form cannot refer to events that are past with respect to ST, but see (12). I conclude that the absolute tense analysis proposed by Koev is untenable.

In the next section, I discuss the modal component of the evidential.

#### 4. Epistemic modal meaning of the Bulgarian evidential

In her seminal paper, Izvorski (1997) convincingly argues that the

<sup>4</sup> Koev uses different terminology: Learning Time (LEARN) for EAT, Topic Time (TT) for RT, and Utterance Time (UT) for ST. For the ease of exposition, I present Koev's analysis using my terminology, i.e. EAT, RT, and ST.

Bulgarian evidential has an epistemic modal component. According to her analysis, shown in (15), the evidential encodes universal modal force and the proposition  $p$  in the scope of the evidential is interpreted with respect to the speaker's knowledge state.

- (15) The interpretation of EV  $p$  (Izvorski 1997:226)
- a. Assertion:  $\Box p$  *in view of the speaker's knowledge state.*
  - b. Presupposition: *Speaker has indirect evidence for  $p$ .*

One of the advantages of Izvorski's proposal is that it provides a uniform analysis of the evidential in reportative and inferential contexts ('indirect evidence' in (15) subsumes both report and inference). However, while the modal analysis in (15) is well suited to account for the inferential meaning of the Bulgarian evidential, the assumption that the proposition  $p$  in the scope of the evidential is necessarily true in the speaker's knowledge states (15a) is problematic for reportative contexts. Specifically, in reportative contexts, the speaker can use the evidential even if she believes that  $p$  is false, as in (16) (see also Smirnova 2011). Izvorski's analysis (cf. (15a)) commits the speaker to the belief that  $p$  is true, and thus predicts that the evidential should be infelicitous in (16).

(16) Reportative context: Your roommate Maria, a successful businesswoman, made a commitment to write a book. You know that because Maria is busy, it is her sister who is ghostwriting the book. When one of your friends commends Maria for writing a book, you say:

Maria pišela kniga! Ta tja nito edin red ne e na-pisala.  
 Maria write<sub>IMPERF.PRES.PLE</sub> book<sub>EM</sub> she<sub>NEG</sub> one line<sub>NEG</sub> be<sub>PERF-WRITE.PLE</sub>  
 'Maria is writing a book, [I hear]! She hasn't written a single line.'

The inferential context differs from the reportative one in that if the speaker believes that  $p$  is false, the evidential is infelicitous, as (17) shows. This is expected, given the analysis in (15a).

(17) Inferential context: When you discovered a chapter of an unauthored manuscript in Maria's study, you inferred that Maria is writing a book. Later you learned that it is Maria's sister who is writing the book. When one of your friends asks you what Maria does, you say:

# Maria pišela kniga. Vsāštnost, tova ne e taka.  
 Maria write<sub>IMPERF.PRES.PLE</sub> book. In.fact it <sub>NEG</sub> be<sub>3SG.PRES</sub> SO  
 ‘Maria is writing a book, [I inferred]. In fact, it is not true.’

On the first sight, the difference between (16) and (17) presents a challenge for Izvorski’s uniform analysis. However, I argue that a uniform analysis is still possible under the assumption that in reportative contexts the proposition in the scope of the evidential is interpreted with respect to the reporter’s knowledge states, not the speaker’s, and that  $p$  is necessarily true only as far as the reporter’s epistemic states are concerned (cf. the analyses of *say* as an intensional operator in Ogihara 1996, Abusch 1997). Under this analysis, evidential reports are reports *de dicto*, i.e. they no longer commits the speaker to the belief that  $p$  is true.

### 5. The compositional semantic analysis

I propose that the Bulgarian evidential has the meaning as in (18). According to (18), given  $Q$  (a sentence radical), a world  $w$ , and a time  $t$ , there exists a time  $t''$  (EAT) such that  $t''$  precedes  $t$  and in all world-time pairs  $\langle w', t''' \rangle$  compatible with what the relevant epistemic agent  $\alpha$ , the speaker or the reporter, believes in the actual world  $w$  at the time  $t''$ ,  $Q$  is true in  $\langle w', t''' \rangle$ . The type of the modal base with respect to which  $Q$  is interpreted ( $MB_{DOX\alpha}$ ) depends on the context: in inferential contexts,  $Q$  is evaluated with respect to the speaker’s belief worlds ( $MB_{DOX(sp)}$ ). In reportative contexts,  $Q$  is evaluated with respect to the epistemic modal base relativized to the reporter ( $MB_{DOX(reporter)}$ ).

(18) EV:

$$\lambda Q \lambda w \lambda t \exists t'' [(t'' < t) \ \& \ \forall (w', t''') [(w', t''') \in MB_{DOX\alpha}(w, t'') \rightarrow Q(w')(t''')]]$$

The derivation of the evidential sentence proceeds as in (19).

(19) (EV (TENSE (ASPECT (Sentence radical))))

Tenses specify the relation between RT and the time of evaluation. Formally, they map properties of times into properties of times and are of

type  $\langle\langle w, \langle i, t \rangle \rangle, \langle w, \langle i, t \rangle \rangle\rangle$  (cf. 20a). Aspectual operators specify the relation between ET and RT (cf. Klein 1994); they map properties of eventualities into properties of times and are of type  $\langle\langle w, \langle ev, t \rangle \rangle, \langle w, \langle i, t \rangle \rangle\rangle$  (cf. 20b). A sentence radical is the denotation of a sentence before the application of temporal, aspectual, and modal operators (Kaufmann 2005). The sentence radical *rain* translates into an expression of type  $\langle w, \langle ev, t \rangle \rangle$  (20c).

- (20) a. FUTURE:  $\lambda P \langle\langle w, \langle i, t \rangle \rangle, \langle w, \langle i, t \rangle \rangle\rangle \lambda w \lambda t \exists t' [P(w)(t') \& t' > t]$   
 b. IMPERFECTIVE:  $\lambda M \langle\langle w, \langle ev, t \rangle \rangle, \langle w, \langle i, t \rangle \rangle\rangle \lambda w \lambda t \exists e [M(w)(e) \& t \subseteq \tau(e)(w)]$   
 c. Sentence radical: *rain*:  $\lambda w \lambda e [rain(w)(e)]$

The compositional analysis of the sentence in (21) is presented in (22).

(21) Reportative context: same as (5):

Štjalo da vali                      dovečera.  
 will<sub>PLE</sub> SUBJ rain<sub>IMPERF.3SG</sub> tonight  
 Intended: ‘It will rain tonight, [I heard].’

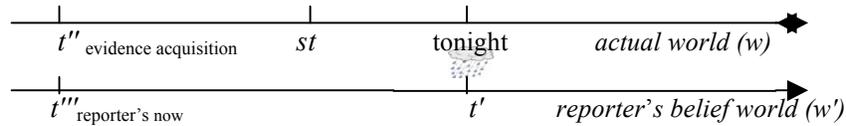
(22) Semantic derivation of (21):

- a. IMPERF (*rain*):  $\lambda M \lambda w \lambda t \exists e [M(w)(e) \& t \subseteq \tau(e)(w)] (\lambda w' \lambda e' [rain(w')(e')]) \equiv \lambda w \lambda t \exists e [rain(w)(e) \& t \subseteq \tau(e)(w)]$   
 b. FUTURE (22a):  $\lambda P \lambda w \lambda t \exists t' [P(w)(t') \& t' > t] (\lambda w \lambda t \exists e [rain(w)(e) \& t \subseteq \tau(e)(w)]) \equiv \lambda w \lambda t \exists t' \exists e [rain(w)(e) \& t' \subseteq \tau(e)(w) \& t' > t]$   
 c. EV (22b):  $\lambda Q \lambda w \lambda t \exists t'' [(t'' < t) \& \forall (w', t''') [(w', t''') \in MB_{(report)}(w, t'') \rightarrow Q(w')(t''')]] (\lambda w \lambda t \exists t' \exists e [rain(w)(e) \& t' \subseteq \tau(e)(w) \& t' > t]) \equiv \lambda w \lambda t \exists t'' [(t'' < t) \& \forall (w', t''') [(w', t''') \in MB_{(reporter)}(w, t'') \rightarrow \exists t' \exists e [rain(w')(e) \& t' \subseteq \tau(e)(w') \& t' > t''']]$   
 d. Application to ST:  $\lambda w \exists t'' [(t'' < st) \& \forall (w', t''') [(w', t''') \in MB_{(reporter)}(w, t'') \rightarrow \exists t' \exists e [rain(w')(e) \& t' \subseteq \tau(e)(w') \& t' > t''']]]$

According to (22), (21) denotes the proposition that is true if there exists a time  $t''$ , located in the past of ST, at which the speaker acquires reportative evidence, such that for all world-time pairs  $(w', t''')$

compatible with what the reporter believes in the actual world  $w$  at time  $t''$ , there exists a time  $t'$ , located in the future with respect to  $t'''$ , at which the raining eventuality takes place. (23) is a graphic representation of the temporal relations in (21).

(23) Graphic representation of the temporal relations in (21):



The evidential specifies that EAT precedes ST ( $t'' < st$ ). The time  $t'''$  is the structural equivalent of  $t''$  in the belief worlds of the reporter; it is the *attitude holder's now*, i.e. the time with respect to which the proposition  $p$  in the scope of EV is interpreted (cf. Ogihara 1996, Abusch 1997). The two times  $t''$  and  $t'''$  are temporally isomorphic (cf. Gennari 2003), so it follows that  $t'''$  is in the past of  $st$ . The future tense specifies that at the time of the original report, the reporter believed that the raining eventuality would be realized at some future RT time  $t'$  ( $t' > t'''$ ). Note that  $t'$  and the raining eventuality  $\tau(e)$  are located in the belief worlds of the reporter. Thus, the analysis correctly predicts that the evidential in reportative contexts does not commit the speaker to the belief that  $p$ . Since the evidential tense is relative,  $t'$  can either precede or follow  $st$ . In (21), the RT is picked by the adverb 'tonight'; it is future with respect to ST. Thus, the raining eventuality  $\tau(e)$  is located in the time which is future with respect to both the reporter's now and ST.

## 6. Explaining the absence of the future inferential interpretation

In the analysis presented above, the evidential in inferential contexts is analyzed on a par with epistemic necessity modals, i.e. the proposition  $p$  in the scope of the evidential is necessarily true in the speaker's belief worlds. However, the evidential and necessity modals differ in one important respect – the temporal location of the time with respect to which  $p$  is evaluated. It is this difference, I argue, that is responsible for the contrast in (24) and for the fact that, unlike epistemic necessity modals, the evidential cannot express inferences about the future.

- (24) Inferential context: same as (4):
- a. # Štjalo da vali           dovečera.           [Evidential]  
     will<sub>PLE</sub> SUBJ rain<sub>IMPERF.3SG</sub> tonight  
     Intended: ‘It will rain tonight, [I inferred].’
- b. Trjabva da vali           dovečera.           [Epistemic modal]  
     must<sub>PRES</sub> SUBJ rain<sub>IMPERF.3SG</sub> tonight.  
     ‘In all probability, it will rain tonight.’

In modal sentences, the time of evaluation for  $p$ , the proposition in the scope of the modal, is determined by the tense on the modal (cf. Condoravdi 2002). The present tense on *trjabva* ‘must’ in (24b) specifies that the time of evaluation for  $p$  is ST. Thus, (24b) means that all world-time pairs compatible with what the speaker believes at *Speech Time* are such that the raining eventuality takes place at some future time. In the evidential construction, on the other hand, the time of evaluation is past by virtue of the EAT being located in the past, i.e. (EAT < ST). Thus, the evidential sentence in (24a) specifies that all world-time pairs compatible with what the speaker believed at *some past time* are such that the raining eventuality takes place at some future time. The assertion that  $p$  is necessarily true with respect to the speaker’s past belief states, communicated by the evidential sentence in (24a), is weaker than the assertion that  $p$  is true with respect to the speaker’s current belief states. In fact, the evidential sentence in (24a) violates the maxim of quantity: at the time of the conversation the speaker believes that  $p$  will be realized at some future time (recall that the evidential in inferential contexts cannot be used if the speaker believes that  $p$  is false (cf. 17)), yet she can only assert her commitment to  $p$  with respect to some past time. I assume that this weaker construction is blocked and this is why evidential sentences are infelicitous in inferential contexts about the future. A similar effect is observed in the English example in (25), where the past tense on the verb *believe* shifts the evaluation time of the proposition  $p$  (*it will rain tonight*) to the past.

- (25) Context: same as (24)  
 # I believed it would rain tonight.

Reportative contexts crucially differ from inferential ones in that the proposition  $p$  is interpreted with respect to the reporter’s belief worlds.

The evidential in reportative contexts does not communicate anything about the speaker's beliefs, past or present. Therefore, unlike inferential contexts, reportative contexts do not give rise to the pragmatic violation. This is why the future evidential is felicitous in reportative contexts.

### Conclusion

In this paper I argued that in addition to the epistemic modal component, the Bulgarian evidential has a temporal semantic component: it functions as a relative tense. The formal compositional analysis I proposed shows how the modal and the temporal meanings interact and explains why the Bulgarian evidential cannot express inferences about the future, a fact that hasn't not received much attention in the formal semantic literature.

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**Focus Sensitive Intensifiers in Slavic:  
*Až/Čak* in Contrast to *Even* and *Only*<sup>1</sup>**

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**1. Introduction**

The adverbs *až*, found in Polish, Czech, Slovak and Russian, and *čak* found in Bulgarian, Serbian and other South Slavic languages, bear some similarity in meaning to the adverb *even*, and to the scalar adverb *only/merely*, but they also differ from *even* and *only* in crucial respects. I propose that *až* and *čak* are focus associating adverbs that have scalar semantics, like *even* and scalar *only/merely*. However, they are not additive, nor do they necessarily evoke a scale of likelihood or noteworthiness, in contrast to *even*. Unlike *only/merely* they place the preadjacent high on the contextual scale. I identify three meaning components of *až/čak* which typologically place them between scalar additives and scalar exclusives.

**2. Like *even*, like *only***

The addition of the adverbs *až/čak* modifies the meaning of the sentence in a way that resembles the contribution of the equivalents of *even* in

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Bulgarian (*daže*) (1), in Polish (*nawet*) (2), in Slovak (*dokonca*) (3). (1)-(3) can be translated into English using *even*.

- (1) Govorih *čak / daže* s Mary. *Bulgarian*  
 I.talked *čak / even* with Mary  
 ‘I talked even to Mary.’
- (2) Rozmawiałem *aż / nawet* z Marią. *Polish*  
 I.talked *aż / even* with Mary  
 ‘I talked even to Mary.’
- (3) Zajtra vydiskutujem to *až / dokonca* s Igorom. *Slovak*  
 tomorrow I.will.discuss it *až / even* with Igor  
 ‘Tomorrow I will discuss it even with Igor.’

Intuitively, the sentences in (1)-(3) convey that there is something exceptional about talking to Mary/Igor, and this meaning is clearly induced by *až/čak* as well as the counterparts of *even*.

However, the following examples illustrate that *až/čak* are different from *even*, as they can appear in a set contexts that are incompatible with *even*:

- (4) Prepáčte, že odpisujem *až / (\*dokonca)* teraz. *Slovak*  
 excuse that I.answer *až / even* now  
 ‘I am sorry that I am replying only/#even now.’
- (5) Subudih se *čak / edva / (\*daže)* v 6. *Bulgarian*  
 I.woke.up refl *čak / only / even* at 6  
 ‘I woke up only/#even at 6.’
- (6) Daneček se vzbudil *až / (\*dokonce)* v 6 ráno. *Czech*  
 Dan refl woke-up *až / even* at 6 am  
 ‘Little Dan woke up only/#even at 6 am.’

Interestingly, in (4)-(6) *až/čak* can be translated as *only* or *merely* in English. (5)-(6) can also be adequately expressed using the phrase ‘no sooner than’, i.e. the person did not wake up before 6. The use of *daže/dokonce* ‘even’ is infelicitous in the examples above.

Let us note that *až* is found already in Old Slavic and appears related to *daže* ‘even’ in contemporary Russian and Bulgarian. *Čak* seems to be an adaptation of the Turkish *çok* ‘very’.

I argue that the availability of the *even*-like and *only*-like readings illustrated above gain *až/čak* a special place in the typology of focus sensitive adverbs available cross-linguistically. Crucially, their contribution depends on syntactic focus (Section 3) and the scale of alternatives is contextually specified (as in the case of *only*, *merely* and unlike *even*, whose default is the likelihood scale – Sections 4, 5). As in Tomaszewicz (2012, 2013) I argue that *až/čak* should be seen as a scalar opposite of scalar *only/merely*, rather than a sub-species of *even* (Section 4).

### 3. Focus association

*Až/čak* can appear as sisters to different syntactic constituents with a detectable effect on the meaning. In (1)-(3) the interpretation that the person talked to is significant is the result of *až/čak* modifying a PP. In (4)-(6) the time adverbials are modified, while in (7)-(9) the VP is modified with the effect on the meaning that crying/breathing heavily was somehow significant. The domain of association can also be the whole clause as in (10).

- (7) *Až / nawet* [<sub>VP</sub> krzyczała] (z bólu). *Polish*  
*až / even* she.cried from pain  
 ‘She even cried (from pain).’
- (8) Ja som *až / dokonca* [<sub>VP</sub> kričala] (od bolesti). *Slovak*  
 I did *až / even* cry from pain  
 ‘I even cried (from pain).’
- (9) *Čak / daže* [<sub>VP</sub> se zaduha] (ot vulnenie). *Bulgarian*  
*čak / even* refl he.breathed-heavily from emotion  
 ‘He even started breathing heavily, (being so emotional).’
- (10) Majóweczka u Pepików tuż... *až* [<sub>IP</sub> głowa boli] myśleć. *Polish*  
 picnic with Czechs soon *až* head hurts to.think  
 ‘The picnic with the Czech friends is coming up. You get a headache just from thinking about it.’

When both subject and IP association yield plausible meanings, an ambiguity arises. The associate determines the implicit comparison with alternatives of the same type. In (11) alternatives are either other people who could tell Ann to stop singing, or other less serious things that may have happened (e.g. the whole auditioning committee laughing).

- (11) Anna pela tak ploho, čto *až* [<sub>IP</sub>[<sub>DP</sub> Maria] ej skazala ostanovit'sja].  
 Anna sang so badly that *až* Maria her said to.stop  
 ‘Anna sang so badly, that out of all things that could happen Maria told her to stop.’  
 ‘Anna sang so badly, that out of all people Maria told her to stop.’

*Russian*

Comparison with alternatives is typical of focus associating adverbs such as *even* and *only*. Focus evokes a set of alternatives, and therefore, the way focus sensitive adverbials modify the meaning of the sentence depends on which constituent is focused.

*Až/čak* obligatorily associate with focus. Firstly, when focus is present, they cannot associate with a topic. In **Error! Reference source not found.** Janek is the syntactic focus associate of *only* (*only* is standardly taken to associate with focus, e.g. Beaver and Clark 2008, a.o.), and *až* cannot be used to add the meaning that Janek’s talking to the dean of all people is noteworthy.

- (12) Tylko [Janek<sub>F</sub>] rozmawiał (#*až*) z rektorem. *Polish*  
 only Janek t alked *až* with chancellor  
 ‘Only Janek talked to the dean.’

Secondly, clitic pronouns force a wider domain reading ((13)b vs. (13)a), which shows that *až/čak* cannot associate with weak (unfocused) pronouns. In (13)b-c *až* has to associate with the IP/VP or the DP, which can be independently focused (cf. Hoeksema and Zwarts 1997, Beaver and Bradley 2001 on focus association of *only* in Dutch<sup>2</sup>):

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<sup>2</sup> In Dutch *alleen* cannot associate with the weak pronoun ‘me’ (H&Z 1997):  
 (i) Ze toonden Piet en mij de Amazone, maar *alleen* mij (\*me) toonden  
 They showed Piet and me the Amazon, but only me me showed  
 ze ook de STEDEN.  
 they also the cities.

- (13) a. Nakoniec *aż* [DP jemu] gębę obili. *Polish*  
 in end *aż* him face punch  
 ‘In the end, they punched in the face even HIM.’  
 #‘In the end, they even punched him in the face.’  
 #‘In the end, they punched him even in the face.’
- b. Nakoniec *aż* [IP [VP mu gębę obili.]]  
 in end *aż* him face punch  
 ‘In the end, they even punched him in the face.’  
 #‘In the end, they punched in the face even HIM.’
- c. Nakoniec *aż* mu [DP gębę] obili.  
 in end *aż* him face punch  
 ‘In the end, they punched him even in the face.’  
 #‘In the end, they punched in the face even HIM.’

The above contrasts indicate that *aż/čak* have to associate with constituents that are focused, i.e. they are focus sensitive the way *even* and *only* are. In the next section I illustrate that the meaning contribution of *aż/čak* involves a scale constructed on the basis of the focal presupposition.

#### 4. Scalarity

##### 4.1 Propositional Alternatives

Focus by itself evokes a contrast set and thus contributes to the reading of noteworthiness, but there is no ordering among the alternatives. E.g. focus in (14)a indicates that of the set of all contextually relevant people, (14)b, it is Maria that Janek talked to, but it is not necessarily the case that Maria is more important than other relevant people.

- (14) a. Janek talked to [Maria]<sub>F</sub>.  
 b. {Janek talked to Maria, Janek talked to Ellen,  
 Janek talked to Anna, ...}

Scalar focus associating adverbs both (i) introduce a ranking among the alternatives, and (ii) indicate whether the position of the prejacent proposition on the scale is high or low. Assuming that the presence of focus evokes a set of propositional alternatives, i.e. a set of propositions obtained by substituting the focus-marked expression with alternatives of the same semantic type, e.g. (14)b, the additional presence of a scalar item such as *even* or *merely* will impose an ordering on this set.

A scale as in (15)a is appropriate for (15)b-c. *Even* in (15)b requires Maria to be an unlikely person for Janek to talk to, and hence high on the scale of significance, while *merely* in (15)c requires Magda to be low on the contextual scale of alternatives. An additional requirement imposed by a scalar particle is the dimension of the scale; noteworthiness/likelihood in the case of *even*, and a contextually relevant scale such as importance in the case of *merely* (further discussed in Section 5).

- (15) a.                    ↑    Janek talked to Maria.  
                               ↓    Janek talked to Ellen.  
                               ↓    Janek talked to Anna.  
                               ↓    Janek talked to Magda.
- b. Janek *even* talked to Maria.  
 c. Janek *merely* talked to Magda.

*Až/čak* places the prejacent high on the contextually relevant scale, which is similar to *even* placing its prejacent high on the scale of noteworthiness. However, *even* contributes to the meaning of the prejacent proposition only at the level of presupposition, whereas I will show using the standard tests for presupposed vs. asserted content that *až/čak*, just like *only/merely*, contribute to the assertion of the prejacent.

#### 4.2 *Až/čak* in comparison to *even*

Operators like negation, questions or antecedents of conditionals target asserted content (Chierchia & McConnell-Ginet 1990). Embedding a sentence containing *nawet* under negation, (16), or in a question, (17), shows that *nawet*, just like *even*, contributes scalarity solely at the level of presupposition (Karttunen & Peters 1979, Horn 1969, Rooth 1985, 1982). In (16)-(17) three meaning components are identified: assertion (a) and two presuppositions (b-c).

In (16) the prejacent of *nawet* is targeted by negation – Janek did not talk to the chancellor, (16)a. Additionally, we infer that the chancellor is the least significant person he could talk to, (16)b, and that no other salient alternative is true, (16)c.

- (16) Janek nie rozmawiał *nawet* z rektorem. *Polish*  
 Janek not talked even with chancellor  
 ~ (a) Janek did not talk to the chancellor.  
 ~ (b) Janek's talking to the chancellor is likely/insignificant.  
 [presupposition]  
 ~ (c) Janek did not talk to anybody else. [presupposition]

That the latter two components are presupposed is confirmed in (17). Although the orientation of the scale of significance switches, (16)b vs. (17)b, the scalar meaning component is neither targeted by negation nor by a question operator. (Negation with *nawet/even* has the effect of scale reversal<sup>3</sup>, the chancellor is the lowest on the scale of the relevant people in (16), but it is not case that the highest position on the scale is negated, which will turn out to be the case with *aż/čak* in (19)a).

Similarly, the existence of a salient alternative to the prejacent, contributed by the so-called 'additive' component of *even* (Horn 1969, Karttunen and Peters 1979, a.o.), (16)c and (17)c, is what projects: (16) conveys that Janek did not talk to the chancellor let alone other important people, (17) asks if Janek talked to the chancellor in addition to other important people.

- (17) Czy Janek rozmawiał *nawet* z rektorem?  
 whether Janek talked even with chancellor  
 ~ (a) Did Janek talk to the chancellor?  
 ~ (b) Janek's talking to the chancellor is unlikely/significant.

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<sup>3</sup> For our purposes what it matters is that with *nawet/even* scalarity is only presupposed, in contrast to *aż/čak* as demonstrated in (19). On the so-called 'scope theory' (originated in Horn 1971, Karttunen and Peters 1979), in negative contexts *even* takes scope above negation, so that the scale of alternatives is built upon the negated proposition, which is perceived as scale reversal. On the *NPI theory* (beginning with Rooth 1985) there are two lexical items for *even*, one occurring in the NPI-licensing contexts and the other one elsewhere.

[presupposition]

↪ (c) Janek talked to somebody else. [presupposition]

Thus, *nawet/even* have been shown to have a purely presuppositional effect on the meaning. It does not affect the asserted content of the prejacent *p*, (18)a. It contributes two presuppositions: *p* is the least likely among the alternatives (scalarity), (18)b, and a salient alternative to *p* is true (additivity), (18)c.

(18) Janek rozmawiał *nawet* z rektorem.

Janek talked even with chancellor

↪ (a) Janek talked to the chancellor. [assertion]

↪ (b) Janek's talking to the chancellor is unlikely/significant.

[presupposition]

↪ (c) Janek talked to somebody else. [presupposition]

The same tests reveal that *aż/čak*, in contrast to *even*, are not truth-conditionally vacuous. Crucially, a negative sentence containing *aż/čak* does not convey the negation of the prejacent.<sup>4</sup> (19) does not say that Janek did not talk to the chancellor (vs. (16)), but instead it says that Janek talked to someone less important, but not the chancellor, (19)a.

(19) Janek nie rozmawiał *aż* z rektorem.

Janek not talked *aż* with chancellor

↪ (a) Janek talked to somebody less important than the chancellor.

↪ (b) Janek's talking to the chancellor is significant. [presupposition]

↪ (c) Janek talked to somebody at most as important as the chancellor. [presupposition]

(19)a contrasts with *even* in (16)a, where negation reversed the scale but the position of the person Janek talked to remained at the extreme

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<sup>4</sup> The reviewer points out that her/his Russian informants reject *aż* in negative contexts. The native speakers I consulted all accepted it. In Tomaszewicz (2013) I discuss some aspects of the cross-Slavic variation in the more fine-grained semantics of *aż/čak*.

end of the scale. In (19)a the person Janek talked to is not at the top of the scale, i.e. it is not the chancellor.

The high position of the chancellor on the scale is presupposed, (19)b (similarly to (16)b). It is also presupposed, (19)c, that the alternatives under consideration can be at most as high on the scale as the prejacent, which means for (19) that the top-most relevant alternative is Janek's talking to the chancellor (while e.g. his talking to the minister of higher education is not even under consideration).

Embedding under a question operator, (20), confirms that *až/čak* assert the exclusion of lower alternatives (i.e. Janek's talking to somebody less important) and presupposes a high position on the scale of alternatives. (20) asks if Janek talked to anybody less important, (20)a, let alone the chancellor who is at the top of the scale, (20)b-c.

- (20) Czy Janek rozmawiał *až* z rektorem?  
 whether Janek talked *až* with chancellor  
 ~ (a) Did Janek talk to anybody less important than the chancellor?  
 ~ (b) Janek's talking to the chancellor is significant. [presupposition]  
 ~ (c) Janek talked to somebody at most as important as the chancellor. [presupposition]

We can conclude that, in contrast to *nawet/even*, the scalarity of *až/čak* is both asserted, (via the exclusion of lower alternatives, (21)a) and presupposed ((21)b-c). *Až/čak* assert that no alternative to the prejacent *p* that is lower on the contextual scale is true (exclusivity), (21)a. It also presupposes that *p* is high on the contextual scale, (21)b, and that alternatives at most as high as *p* are under consideration, (21)c.

- (21) Janek rozmawiał *až* z rektorem.  
 Janek talked *až* with chancellor  
 ~ (a) Janek did not talk to anybody less important than the chancellor.  
 ~ (b) Janek's talking to the chancellor is significant.  
 [presupposition]  
 ~ (c) Janek talked to somebody at most as important as the chancellor. [presupposition]

Note that the exclusivity in (21)a together with the presuppositions in (21)b-c, which add that lower alternatives are under consideration, of which talking to the chancellor is the highest on the scale, means that (21) is not false if Janek did talk to somebody lower than the chancellor in addition to the chancellor, but it is false if Janek talked to some less important person but not the chancellor. Therefore, (21) is true if Janek didn't talk to anybody else, (22), but (18) is not, because *nawet* contributes additivity.

- (22) Janek rozmawiał *aż/(#nawet)* z rektorem, ale nie rozmawiał  
 Janek talked *aż/even* with chancellor but not talked  
 z nikim innym.  
 with nobody else  
 'Janek talked to somebody so important as the chancellor, but he did not talk to anybody else.'

To contradict the exclusive assertion that the most important person Janek ended up talking to was the chancellor, we need to affirm that he did talk to a person lower on the scale of importance and that this person is the lowest on the scale – hence, in (23) *zaledwie/merely* needs to be used.

- (23) Janek nie rozmawiał *aż/(#nawet)* z rektorem, a *zaledwie*  
 Janek nottalked *aż/ even* with chancellor but merely  
 z dziekanem.  
 with dean  
 'Janek did not talk to anybody as important as the chancellor, but he merely talked to the dean.'

(23) suggests that *aż/čak* and *zaledwie/merely* are exact scalar opposites, whereas *nawet/even* and *zaledwie/merely* are not.

#### 4.3 *Aż/čak* in comparison to merely

That *zaledwie/merely* is a scalar opposite of *aż/čak* is demonstrated by using the same tests for asserted/presupposed content. Under negation,

the exclusive component in (24)a is exactly the opposite of the component in (19)a.

- (24) Janek nie rozmawiał zaledwie z rektorem.  
 Janek not talked merely with chancellor  
 ~ (a) Janek talked to somebody more important than the chancellor.  
 ~ (b) Janek's talking to the chancellor is insignificant.  
 [presupposition]  
 ~ (c) Janek talked to somebody at least as important as the  
 chancellor. [presupposition]

The two presupposed components of *zaledwie/merely* in (24)b-c are also the scalar opposites of (19)b-c. With *zaledwie/merely* a scale of people more important than the chancellor is under consideration, (24)b-c, while with *aż/čak* the relevant scale involves less important alternatives. Embedding in a question, (25), yields the same results.

- (25) Czy Janek rozmawiał zaledwie z rektorem?  
 whether Janek talked merely with chancellor  
 ~ (a) Did Janek talk to anybody more important than the chancellor?  
 ~ (b) Janek's talking to the chancellor is insignificant.  
 [presupposition]  
 ~ (c) Janek talked to somebody at least as important as the  
 chancellor. [presupposition]

Thus, *zaledwie/merely* asserts that no alternative to the prejacent  $p$  that is higher on the contextual scale is true (exclusivity), (26)a. It also presupposes that  $p$  is low on the contextual scale, (26)b, and that alternatives at least as high as  $p$  are under consideration, (26)c, (Klinedienst 2005).

- (26) Janek rozmawiał zaledwie z rektorem.  
 Janek talked merely with chancellor  
 ~ (a) Janek did not talk to anybody more important than the  
 chancellor.

↪ (b) Janek's talking to the chancellor is insignificant.

[presupposition]

↪ (c) Janek talked to somebody at least as important as the chancellor. [presupposition]

Beaver & Clark (2008) sum up the contribution of *only* as “*contra* expectation, nothing stronger holds” (p. 279). The scalar reversal of each of the meaning components of *only*, yields the interpretation for *aż/ćak* that can be described as: *contra* expectation, something stronger holds. In the next section I demonstrate that with *aż/ćak* the scale what is more/less expected is follows from the context (just as with *only/merely*) but need not coincide with likelihood (unlike with *even*).

### 5. The dimension of the scale

The scale of importance evoked by *aż/ćak* in the previous examples does not have to coincide with a scale of likelihood. With *aż/ćak*, just like with *only/merely*, the scale is contextually defined, on the basis of the prejacent and the pragmatics of the discourse, while with *even* the scale can apparently always be related to likelihood.

In (27) *even* indicates that hiring an average actor is the least likely, yet we are planning to do just that. For *aż/ćak* the salient scale needs to be specified on the basis of ‘actors that we are willing to hire’, but the prejacent ‘we will hire an average actor’ is pragmatically incompatible with being placed high on this scale. Thus, in (27) only *even* is felicitous. In (28) the context allows for both *aż/ćak* and *even*, because ‘a famous actor’ is compatible with both a likelihood and a contextual scale.

(27) *Zatrudnimy nawet /#aż [przeciętnego]<sub>F</sub> aktora.* *Polish*

we.will.hire even / *aż* average actor

‘We will hire even an average actor.’

(28) *Zatrudnimy nawet / aż [światowej sławy]<sub>F</sub> aktora.*

we.will.hire even / *aż* world famous actor

‘We will hire even a world-famous actor.’

A parallel example containing *zaledwie/merely* requires that if the standard is to hire relatively well-known actors, the prejacent needs to be

low on the scale with respect to that standard, (29). At the same time, the prejacent does not have to be the least likely thing we are willing to do.

- (29) *Zatrudnimy zaledwie [przeciętnego]<sub>F</sub>/#[światowej sławy]<sub>F</sub> aktora.*  
 we.will.hire merely average world famous actor  
 ‘We will hire merely an average actor.’

The example in (30) further illustrates the point that the high/low position on the contextual scale is established with respect to some standard. If it is known that eating potatoes for dinner is standard, even it is an unlikely thing to do for Maria, *až* is infelicitous because its presupposition that eating potatoes is the highest on the scale clashes with the background knowledge.

- (30) *Maria nikogda ne doedaet ves’ obed, no segodnja ona*  
 Maria never not eats.up all dinner, but today she  
*s’ela daže/#až kartošku.* *Russian*  
 ate even/#až potatoes  
 ‘Maria never eats all of her dinner, but today she even ate up the potatoes.’

Thus, when our expectations are exceeded but a contextual standard is not, *až/čak* are infelicitous.<sup>5</sup> In contrast to *nawet/even*, the scalar contribution of *až/čak* and *only/merely* cannot be generalized to likelihood, which suggest that the (i) dimension of the scale, as well as (ii) the position of the prejacent on the scale and (iii) the condition on the alternatives (excluded or existentially presupposed) are independent factors in the typology of scalar propositional operators.

## 6. Conclusion

I have shown that *až/čak* are focus associating adverbs like *even* and *only/merely*, and can also be analyzed as taking propositional scope at LF, where the set of propositional alternatives is established in accordance with the focus-induced presupposition.

<sup>5</sup> In a similar way the English equative can contribute a reading that a contextual standard is exceeded (Rett 2008).

(i) She ate *as many as* one dozen eggs/(?two eggs) daily.

*Až/čak* contribute scalarity to the meaning of the prejacent by operating both at the level of the assertion and at the level of presupposition. Their three meaning components are exact scalar opposites of the components contributed by *only/merely*. *Až/čak* (i) assert that no lower alternative to the prejacent proposition is true, (ii) presuppose that on the contextual scale of alternatives at most the prejacent is true, and (iii) presuppose that the prejacent is high on the scale.<sup>6</sup>

*Only/merely* (i) assert that no higher alternative to the prejacent is true, (ii) presuppose that on the contextual scale at least the prejacent is true, and (iii) presuppose that the prejacent is low on the scale, (Klinedinst 2005).

The presupposition of *až/čak* that the prejacent has a high position on the scale is similar to the scalar presupposition of *even* that places the prejacent low on the scale of likelihood, and hence high on the scale of noteworthiness, therefore in some contexts the two particles are interchangeable. However, *až/čak* allow for scales of more specific, context dependent dimensions, and some of these scales are incompatible with *even*. Moreover, *even*, in contrast to *až/čak* and *only/merely* contributes to the meaning of the prejacent solely at the level of presupposition.

*Even* presupposes (i) that the prejacent is low on the scale of likelihood, and (ii) that some alternative on the scale is true. The latter, so-called additive presupposition, contrasts with the exclusivity contributed by *až/čak*, which, as I have shown, accounts for a range of contexts where the two are not interchangeable.

I conclude that *až/čak* should be seen as scalar opposites of scalar *only/merely*, rather than a sub-species of *even*. Giannakidou (2007) identifies specific meaning components that classify the members of the family of *EVENs*: the scalar dimension (likelihood vs. contextual scale), scale structure (low vs. high position of the prejacent on the scale), conditions on alternatives (additivity vs. exclusion). My analysis of *až/čak* suggests that cross-linguistically we can expect to find scalar adverbs that belong to both a family of *EVENs* and a family of exclusives.

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<sup>6</sup> Some cross-Slavic differences in the use of *až/čak* are discussed in Tomaszewicz (2013).

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## A Case for Result-Modifying Prefixes\*

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### 1. Introduction

This paper discusses the syntactic position of the type of Slavic verbal prefixes underlined in (1), whose semantic contribution with respect to the singly-prefixed counterpart is represented by the underlined part of the translation.<sup>1</sup> Because of their semantic effect, the prefixes in (1a) through (1c) are often called ‘excessive’, ‘repetitive’ and ‘attenuative’, respectively.

- (1) a. pre-na-trpati    b. pre-u-stekleničiti    c. pri-vz-digniti  
over-on-stuff        over-in-bottle        at-up-lift  
‘to stuff too full’    ‘to rebottle’        ‘to lift up slightly’

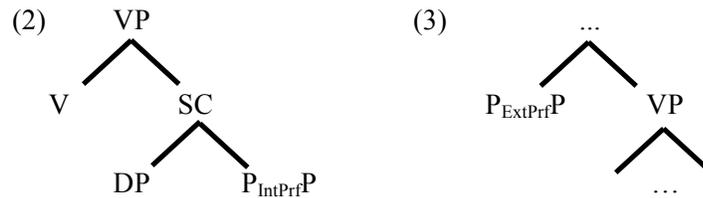
The discussion is cast against the background of the widely-accepted view that Slavic prefixes split into two large groups: one group contains ‘internal’ or ‘lexical’ prefixes, which contribute spatial or idiosyncratic meanings, affect the base-verb’s argument structure, cannot stack over other prefixes and will always be the only one of its kind on the verb stem; the other group contains ‘external’ or ‘superlexical’ prefixes, which contribute adverb-/measure-/aspect-like meanings, do not affect the base-verb’s argument structure and can stack over another prefix.

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<sup>1</sup> Unless marked otherwise, non-English examples are from Slovenian. I deviate from the standard orthography in separating the prefixes and the stem with hyphens.

These differences have been proposed to find a straightforward explanation if we assume that internal prefixes originate as resultative secondary predicates in a small-clause-like complement of the verb, (2), whereas external prefixes originate as heads or specifiers of aspectual, quantificational, etc., functional projections above the VP, (3) (e.g. Svenonius 2004, Romanova 2007, Ramchand 2008, etc.).<sup>2,3</sup>



The underlined prefixes in (1) above are stacked over another prefix, contribute adverb-/measure-/aspect-like semantics, and have no effect on their input's argument structure. Following the approach outlined above, this puts such prefixes squarely in the external group, whereby their syntactic position should be outside the vP/VP, as in (3). Furthermore, one thing that the three underlined prefixes in (1) have in common, and which separates them from other classes of stacked prefixes, is that in the presence of secondary-imperfective morphology, they do not have a perfectivizing effect, as observed for similarly-looking prefixes in Russian by Tatevosov (2008). This is shown in (4)-(5), where the progressive-tense gloss is used to represent an imperfective reading and the simple-tense gloss is used to represent a perfective reading.

- (4) a. u-stekleničevati      b. pre-u-stekleničevati  
       in-bottle<sub>IMPF</sub>            over-in-bottle<sub>IMPF</sub>  
       ‘to be bottling’         ‘to be rebottling’
- (5) a. u-stekleničevati      b. na-u-stekleničevati se  
       in-bottle<sub>IMPF</sub>            on-in-bottle<sub>IMPF</sub> REFL  
       ‘to be bottling’         ‘to get one’s fill of bottling’

<sup>2</sup> The result portion of the tree is now often assumed to be built around a dedicated functional projection labelled ResultP/RP (Svenonius 2004, Ramchand 2008, etc.).

<sup>3</sup> This paragraph is borrowed from Žaucer (2012).

This is what led Tatevosov (2008) to finetune the VP-external group by proposing that prefixes such as the outer one in (4b) are located below the secondary imperfective AspP and prefixes such as the outer one in (5b) are above it; he labels the former ‘intermediate’ and reserves the label ‘external’ for the latter. Furthermore, he suggests that prefixes such as the outer one in (4b) may merge either above the vP or below it, though they are always above the VP.

In this paper I will argue that the stacked prefixes in (1) are modifiers of result, merged VP-internally. One consequence of this finding is that a prefix’s ability to stack, its adverb-/measure-/aspect-like meaning, and its failure to trigger argument-structure changes are not reliable diagnostics of VP-externality (but note that this claim goes only one way, it does *not* follow from this that argument-structure changes are not a reliable diagnostic of resultativity, nor does it follow that *no* stacked prefix could be VP-external). In section 2, I will present different types of evidence for the main claim of the paper. Section 3 will briefly mention the option for a verb to host multiple result-modifying prefixes and section 4 will briefly discuss cases with two result prefixes, each with its own result modifying prefix. Section 5 will explain why result-modifying prefixes can sometimes be found as an only prefix, and section 6 will conclude.

## 2. Evidence

### 2.1 Scope with respect to VP-adverbials

The first piece of evidence against a VP-external attachment of the prefixes under investigation comes from their relative scope with respect to VP-adverbials. As shown in (6)-(7), the so-called repetitive *pre-* shows low scope with respect to VP-adverbials.

- (6) Juš je pismo na-pisal doma, pre-na-pisal ga bo pa v službi.  
 Juš is lettel on-written home over-on-written it will PTCL in work  
 ‘Juš wrote the letter at home and he will rewrite it at work.’
- (7) U-stekleničil sem tole vino sicer na roke, pre-u-stekleničil ga bom  
 in-bottled am this wine PTCL on hand over-in-bottled it will  
 pa z mašinco.  
 PTCL with machine  
 ‘Though I bottled this wine manually, I’ll rebottle it with a machine’

In (6), the letter was not written at work the first time around, suggesting that *pre-* scopes below the place adverbial ‘at work’ (cf. Williams 2011: 15, 51 for temporal adverbials and manner adverbs with English *re-*). In (7), the wine was not bottled with a machine the first time around, suggesting that the ‘with’-adverbial is outside the scope of *pre-*. The repetitive *pre-*, therefore, does not seem to originate above the VP.

## 2.2 Scope with respect to Restitutive ‘again’

It is well-known that some adverbs like ‘again’ show an ambiguity between a repetitive and a restitutive reading, and it is widely assumed that the two readings arise due to a different-height attachment of the adverb: whereas the repetitive reading is derived higher up, the restitutive reading, represented in an LCS format in (8), derives from attaching ‘again’ below the VP (McCawley 1976, Stechow 1996, Rapp & Stechow 1999, Beck & Johnson 2004, Marantz 2007, etc.)

(8) [CAUSE [BECOME [‘again’ [RESULT]]]]

Looking at the measure prefixes *pri-* ‘partly’ and *pre-* ‘over-’ in (9)-(10), we see that they obligatorily take narrow scope with respect to the restitutive reading of *spet* ‘again’.

(9) Juš je klop spet pri-vz-dignil.  
 Juš is bench again at-up-lifted  
 ‘Juš restored the bench to a partly lifted state.’  
 (not: ‘Juš was partly involved in lifting the bench.’)

(10) Juš je hladilnik spet pre-na-polnil.  
 Juš is fridge again over-on-filled  
 ‘Juš restored the fridge to an overfilled state.’  
 (not: ‘Juš was overly involved in filling up the fridge.’)

In an LCS format, the scope positions that *pri-* ‘partly’ and *pre-* ‘over-’ from (9)-(10) have in a decomposed verb phrase would be as in (11)-(12), with *pri-* and *pre-* modifying the result predicate.

(11) [CAUSE [BECOME [‘again’ [‘partly’ [up]]]]]

(12) [CAUSE [BECOME [‘again’ [‘over’ [full]]]]]

In summary, *pri-* ‘partly’ and *pre-* ‘over-’ cannot take wide scope with respect to the restitutive ‘again’. If the restitutive reading of ‘again’ derives from a VP-internal attachment, these prefixes cannot be VP-external, regardless of the fact that they contribute a measure meaning and that they are stacked over another prefix.

### 2.3 Scope with respect to Adverbs of Completion

Piñón (2005) shows that adverbs of completion (‘completely’, ‘partly’, ‘halfway’ etc.) obligatorily scope under the restitutive ‘again’, as can be seen from (13).

- (13) Mary opened the door halfway again. (Piñón 2005: 152)  
 ‘Mary opened the door halfway and so it was again the case that the door was halfway open’ [*again*<sub>restitutive</sub> [*halfway* [*open*]]]  
 (not: ‘Again, Mary opened the door but this time (only) halfway’ [repetitive, with wide scope of *halfway*])  
 (not: ‘Mary opened the door halfway and so it was again the case that the door was open but this time (only) halfway’ [restitutive, with wide scope of *halfway*])

If the restitutive ‘again’, which scopes over adverbs of completion, is inside the VP (Rapp & Stechow 1999, etc.), then adverbs of completion must also be inside the VP.

As it turns out, the repetitive *pre-* not only scopes below the restitutive ‘again’ (see section 2.2 above) but even below adverbs of completion, as seen in (14) (*u-strojiti* = ‘shape’, *pre-u-strojiti* = ‘reshape’).<sup>4</sup>

- (14) Juš je samo na pol pre-u-strojil sistem.  
 Juš is only on half over-in-worked system  
 ‘Juš reshaped the system only halfway.’ (i.e. the system must have been fully shaped before Juš’s half-reshaping, it is not possible that it was only half-shaped before and he half-shaped it again)

<sup>4</sup> Similarly, the English prefix *re-* is claimed to scope under the adverb(ial) of completion by Keyser & Roeper (1992), as in (i), and by Williams (2011), as in (ii).

(i) *John reziped the bag all the way up.* (Keyser & Roeper 1992: 112)

(ii) *John repolluted the river completely.* (Williams 2011: 45)

So even though we are dealing with a measure prefix and a stacked prefix, this *pre-* must originate inside the VP.

#### 2.4 Absence of Token-Differentiated Reading

The repetitive and the restitutive ‘again’ differ in that with an indefinite direct object, the former allows a what McIntyre (2003: 134) calls ‘token-differentiated’ reading of the direct object, whereas the latter does not. In (15), the wounds that Juš bandaged need not have been the same that he bandaged in the previous wound-bandaging event; but in (16), the wounds that Juš bandaged must have been bandaged before.

- (15) Juš je spet ob-vezal štiri rane.  
 Juš is again around-tied four wounds  
 ‘Juš again bandaged four wounds.’
- (16) Juš je štiri rane spet ob-vezal.  
 Juš is four wounds again around-tied  
 ‘Juš rebandaged four wounds.’

Looking at the repetitive *pre-*, we find that it patterns like the restitutive and unlike the repetitive ‘again’ in not allowing a token-differentiated reading of the direct object. In (17) below, the wounds that Juš bandaged must have been bandaged before (cf. McIntyre 2003: 134-7 and Williams 2011: 44 for English *re-*, Borik 2009: 38 for Russian *pere-*).

- (17) Juš je pre-ob-vezal štiri rane.  
 Juš is over-around-tied four wounds  
 ‘Juš rebandaged four wounds.’

Like the restitutive ‘again’, then, *pre-* should also originate low, inside the VP.<sup>5</sup>

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<sup>5</sup> McIntyre (2003: 136) explains the unavailability of token-differentiated reading with English *re-*verbs by positing a representation of an event where the participants are represented as yet-to-be-bound variables, and where the interpretation of these segments is already fixed before the variables are bound by anything that could yield token differentiation (cf. also Beck & Johnson 2004). Borik (2009: 38) presents similar facts in Russian and (following Williams 2011: 44 for *re-*) concludes that the repetitive *pere-* scopes over the object; however, see McIntyre (2003: 136-7) against such a conclusion.

### 2.5 *Restriction on the Type of Predicate*

If a repetitive prefix with the meaning of ‘again’ is superlexical or intermediate, i.e. attached outside the vP/VP, there seems to be no good reason why there should be restrictions on the type of predicate it can occur with. On their repetitive uses, *again*, Slovenian *spet* ‘again’, etc., combine with activities, accomplishments, semelfactives, etc. In fact, Italian has a repetitive prefix which has been analyzed simply as an affixal counterpart of a repetitive adverb, and it indeed freely combines with activities, accomplishments, semelfactives, etc. (Cardinaletti 2003: 8); (18) below shows it used with an activity predicate.<sup>6</sup>

- (18) Ha ri-giocato sporco. [Italian]  
 has re-played dirty  
 ‘He played dirty again.’ (Cardinaletti 2003: 8)

Unlike the Italian *ri-*, however, the Slovenian repetitive *pre-* only occurs on predicates with a result state but not on activities, (19)-(20) (cf. Smith 1997: 179, Marantz 2007, etc. for English *re-*).

- (19) Juš je {spet / \*pre-} igral umazano.  
 Juš is again over- played dirtily  
 ‘Juš played dirty again.’  
 (20) Juš je {spet / \*pre-} godrnjal  
 Juš is again over- grumbled  
 ‘Juš grumbled again.’

If *pre-* is a result-related repetitive morpheme (or more generally a result modifier, even if not a true repetitive morpheme, cf. McIntyre 2003 on English *rework an essay*), we have a straightforward explanation of why *pre-* combines with predicates with a result state but not with activities.

### 2.6 *Stacked Attenuative po- 'a little' in Czech, Reversative Prefixes ...*

In this section, I briefly mention some other stacked-prefix uses that have been claimed to be modifiers of result, or whose counterparts in non-

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Regardless of whether McIntyre’s explanation is correct, what is crucial for my purposes is that the repetitive *pre-* once again patterns with the VP-internal restitutive ‘again’.

<sup>6</sup> The same has also been shown for the French repetitive *re-* (Sportiche 2012: 254) and for the Greek repetitive *ksana-* (Williams 2011: 60).

Slavic languages have been claimed to be modifiers of result. One such case is the stacked *po-* in the Czech example in (21).

- (21) *po-od-skočit* [Czech]  
 around-off-jump  
 ‘jump a little bit away’ (Filip 2003: 89)

Žaucer (2005) and Gehrke (2008) have claimed that in (21) the prefix *od-* provides the result and the prefix *po-* serves as a result modifier (though Gehrke, without comment, still places *po-* above the vP, while at the same time placing the result itself/*od-* below the VP). The same would be the case for DiSciullo & Slabakova’s (2005: 68) Bulgarian *po-na-debeleja* ‘get a little fat’, with *na-* contributing the result and *po-* ‘a little’ serving as a result modifier.

English reversative prefixes (*un-lock*, *dis-en-tangle*, *de-stabilize*) have been treated as result modifiers (McIntyre 2003: 131, Dowty 1979: 257-260), in that they were shown to take narrowest scope with respect to the decomposed verb, as in [CAUSE [BECOME [NOT [RESULT]]]]. The same holds in Slovenian, as in (22) with its stacked reversative *raz-*.

- (22) *raz-od-tujevanje*  
 off-away-alienating  
 ‘dealienation’, ‘reversing alienation’ (SSKJ dictionary)

Analyzing the stacked prefixes from (1) above as result modifiers is thus not without precedents.

## 2.7 Conclusion

Presenting evidence from their scope with respect to VP-adverbials, restitutive ‘again’ and adverbs of completion, and on the basis of the unavailability of a token-differentiated reading and a restriction on the type of predicate, this section argued that the stacked prefixes from (1) above are result modifiers. In a model where resultative prefixes merge in a VP-internal PP (Svenonius 2004, etc.), it will be natural to analyze

such result modifiers as adjuncts to the result/PP or as instantiations of an XP in the extended projection of the resultative PP, (23).<sup>7</sup>

(23) [VP [PP/XP prefix<sub>result-modifier</sub> [PP prefix<sub>resultative</sub> ]]]

### 3. Multiple Result-Modifying Prefixes

It should be noted that there exist cases with multiple result-modifying prefixes. In (24), we have three prefixes, all of which take narrow scope with respect to ‘halfway’, a case of Piñón’s (2005) adverb(ial)s of completion, and should thus be VP-internal (cf. 2.3 above).

(24) *Juš je do polovice pre-po-raz-delil bonbone (med otroke).*  
 Juš is to half over-around-off-dealt candies among kids  
 ‘Juš caused candies to be halfway redistributed in roughly equal shares (among the kids).’

In a model where resultative prefixes merge in a VP-internal result/PP (Svenonius 2004, etc.), none of these prefixes will thus be a VP-external prefix; whereas the stem-adjacent one contributes the result, the other two serve as result modifiers. Given the analysis in (23), multiple result-modifying prefixes present no problem.<sup>8,9</sup>

### 4. Two Result Prefixes, Each with a Result-Modifying Prefix

Arsenijević (2006) and Žaucer (2009) have argued that some prefix stacking, such as (25), involves a stem carrying two resultative prefixes.

<sup>7</sup> In terms of linearization, prefixes would then combine with the verbal stem via phrasal movement, with the whole result PP moving to some position above V. Alternatively, if result-modifying PPs were to be analyzed, unlike in (23), as further specification of the resultative PP and as originating below it (cf. Dikken 1995), the attested linearization can be derived with head movement. See Žaucer (2009: 60-64) for a longer exposition.

<sup>8</sup> They do, however, raise interesting questions, as pointed out by a reviewer, with respect to their relative order and scope, and this may in turn provide clues as to the details about their nature touched on in note 7. Due to space restrictions, I cannot go into this here.

<sup>9</sup> One also finds stacking of one and the same modifier prefix, as in *pre-pre-u-stekleničiti* (over-over-in-bottle) ‘re-re-bottle’ (cf. DiSciullo & Slabakova 2005: 68). As far as I can tell, this is not a problem for (27), it is an iteration not unknown in the realm of modifiers, and the leftmost *pre-* still scopes below adverbs of completion, does not perfectivize, etc.

- (25) *na-na-polnjevati se gum*  
 on-on-fill self tires<sub>GEN</sub>  
 ‘get one’s fill of filling up tires’

If this is true, one would expect that it will be possible—when the combination makes sense semantically—to also have two sets of result-modifying prefixes. (26), where each *na-* hosts its own ‘excessive’ *pre-*, shows that this is indeed possible (cf. Žaucer 2009: 35, 63).

- (26) *pre-na-pre-na-polnjevati se gum*  
 over-on-over-on-fill self tires<sub>GEN</sub>  
 ‘get more than one’s fill of overfilling tires’

Whereas such cases are perfectly expected on my account, they appear to be problematic for an ‘intermediate’ analysis—in the spirit of Tatevosov (2008)—of what I have treated as result-modifying prefixes. That is, Tatevosov interprets the absence of a perfectivizing effect of such prefixes in Russian as evidence of their originating below the secondary imperfective AspP. However, given that (26)’s outer *na-* perfectivizes its secondary imperfective input (see Žaucer 2009), the outermost measure prefix *pre-* that stacks over it could not, unlike its synonymous inner measure prefix *pre-*, originate below the secondary imperfective AspP.

## 5. A Consequence – A Subclass of Result-Modifying Prefixes

### 5.1 Unstacked result-modifying prefixes?

All of the result-modifying prefixes I have discussed above were stacked over a prefix that contributes a resultative secondary predicate, as in (1c) from above, repeated below as (27). Sometimes, however, a prefix with one of these result-modifying meanings also occurs as a sole prefix, as the attenuative (‘a little’/‘slightly’/‘partly’) *pri-* in (28).

- |                            |                             |
|----------------------------|-----------------------------|
| (27) <i>pri-vz-digniti</i> | (28) <i>pri-preti vrata</i> |
| at-up-lift                 | at-push door                |
| ‘lift up slightly’         | ‘close the door partly’     |

In fact, Spencer & Zaretskaya (1998) present a list of Russian attenuative *pri-*verbs, in which roughly 30 out of 60 have the ‘partly’-contributing

*pri-* stacked over a result prefix and roughly 30 do not. If such *pri-* prefixes are analyzed as result modifiers, one may wonder why they should ever be found on a verb as an only prefix.

The answer is quite simple. The presence of a result modifier *presupposes* the structural presence of a result; in other words, there cannot be a result modifier if there is no result. So if we analyze *pri-* as a result modifier we may have already explained why the result-encoding prefix might sometimes have disappeared.<sup>10</sup>

Furthermore, unlike stacked result-modifying prefixes above, which cannot affect their input's argument structure, Spencer & Zaretskaya's (1998) unstacked *pri-* with the same meaning *can*: (29) shows an unselected object with a verb prefixed only with an attenuative *pri-*.

- (29) *On \*(pri-)sypal jamu (peskom).* [Russian]  
 he at-poured hole<sub>acc</sub> sand<sub>inst</sub> (Spencer & Zaretskaya  
 'He half-filled the hole with sand.' 1998: 121)

Under my analysis, this is expected. When stacked, *pri-* is a result modifier on top of a result prefix and as such cannot have argument-structure effects. When an only prefix, *pri-* either combines a modifier and a result head, or represents a modifier stacked over a null resultative prefix (cf. footnote 10 above), so that the possibility of unselected objects is not surprising. And in addition to this difference in argument-structure effects, my approach also captures the meaning similarity (attenuation) between the stacked and unstacked *pri-*. Conversely, the mainstream approach presented in section 1 above would have to treat the stacked *pri-* in (27) as VP-external and the unstacked *pri-* from (28)-(29) as VP-internal/resultative, despite their shared attenuative meaning.

### 5.2 *More of This*

Before concluding section 5, I will briefly illustrate that the attenuative *pri-* is not the only result modifier we find both stacked and unstacked.

<sup>10</sup> Cases like (28) could thus be analyzed as containing a covert prefix/result head, which is recoverable via the presence of the result-modifying prefix; or they could be analyzed as expressing a 'modified state' (Spencer & Zaretskaya 1998, Strigin & Demjanow 2001); or they could be analyzed so that the single prefix in fact spells out more structure, both the result's P and, say, a MeasureP in its extended projection (cf. Wiland 2012).

Example (30) below shows a pair of synonyms listed in the SSKJ Slovenian dictionary in which one version has the repetitive *pre-* stacked over a resultative *ob-*, which turns the verb ‘tie’ into a resultative ‘bandage’, and the other version has the repetitive *pre-* as an only prefix, apparently with nothing turning ‘tie’ into ‘bandage’.

- (30) a. pre-ob-vezati rano      b. pre-vezati rano  
       over-around-tie wound      over-tie wound  
       ‘rebandage a wound’      ‘rebandage a wound’

Similarly, (31) below shows a pair of synonyms listed in the SSKJ dictionary in which one version has the distributive *po-* stacked over a resultative *za-*, which turns the verb ‘sleep’ to a resultative ‘fall asleep’, and the other member has the distributive *po-* as an only prefix, apparently with nothing turning ‘sleep’ to ‘fall asleep’.

- (31) a. po-za-spati                      b. po-spati  
       around-behind-sleep              around-sleep  
       ‘fall asleep one by one’      ‘fall asleep one by one’

And in (32)-(33) below, we have a pair of sentences from the internet, both coining a reversative from ‘teach’; whereas one writer did so by simply stacking the reversative *od-* on the resultatively prefixed ‘teach’, the other affixed the reversative *od-* as well as stripping ‘teach’ of its usual resultative prefix *na-*.<sup>11</sup>

- (32) kar smo se nekoč na-učili [...], se lahko od-na-učimo (www)  
       what are refl once on-taugh      refl can off-on-taugh  
       ‘what we once learned we can also unlearn’  
 (33) ker se vedenja na-učimo, se ga lahko tudi od-učimo (www)  
       as refl behavior on-teach      refl it can also off-teach  
       ‘since a certain behaviour can be learned, it can also be unlearned’

These doublets can all be approached in the same way as was suggested above for attenuative *pri-*verbs: *pre-/po-/od-* act as result modifiers when stacked, and as either combining a modifier and a result head, or

<sup>11</sup> Cf. also the English doublets *dis-en-tangle* and *dis-tangle*, *un-en-tangle* and *un-tangle*.

representing a modifier stacked over a null resultative prefix, when unstacked (cf. footnote 10 above).

## 6. Conclusion

I have argued that if we follow Svenonius (2004), Ramchand (2008), etc., in treating internal prefixes as VP-internal result predicates, then analyzing the stacked prefixes in (1) above as result modifiers explains their scope with respect to the restitutive ‘again’, adverbs of completion, etc. This analysis also allows us to straightforwardly relate the stacked *pri-* that comes with the meaning of ‘a little’ and does not license unselected objects with the unstacked *pri-* that comes with the meaning of ‘a little’ and *does* license unselected objects. On the other hand, treating them as VP-external (whether ‘external’ or ‘intermediate’) fails to explain any of these things. Moreover, if the stacked prefixes in (1) are modifiers of result, it is also not surprising that in the presence of a secondary imperfective such prefixes will scope below the secondary imperfective (see section 1, examples in (4)), given that the resultative prefix they modify also scopes below the secondary imperfective.

In turn, the reported results give support to the independently made claim from Arsenijević (2006) and Žaucer (2009) that stacking is not a solid diagnostic of VP-externality: at the very least, not every stacked prefix is superlexical.

As a final note, I acknowledge that the main claim of this paper is targeted specifically at models which introduce resultative prefixes VP-internally (e.g. Svenonius 2004, Ramchand 2008, Tatevosov 2008). For a model that places above the VP not only superlexical but also resultative prefixes (Wiland 2012, Arsenijević 2010), the results of this paper, even though not consequence-free, may be less interesting. At this point, however, the model which introduces resultative prefixes inside the VP is better worked out and more widely adopted, and it is also the only one that has tried to relate resultative Slavic prefixes to resultative Germanic particles and prefixes; as such, it constitutes a natural point of departure.

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## **Not All Zeros Are the Same: Phonology of Zero Case Markers in Czech\***

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### **1. Introduction**

In Czech nominal declension Nsg and Gpl morphemes have zero allomorphs which are traditionally assumed to have the same phonology. For example, Halle & Nevins (2009) claim that both zeros are underlyingly yers which, being word-final, are deleted during the phonological computation. However, on the basis of contrasting behavior of consonant clusters with final liquids, I argue that these case markers have different lexical representations: the Gpl zero is a yer, but the Nsg zero has no underlying structure at all.

Before the zero case markers, nominal stems ending in consonant-liquid clusters reveal a striking pattern, which has gone unnoticed in the literature. As shown in (1), before the Nsg zero, CLs are either broken up with an epenthetic vowel or the final liquid becomes syllabic. By contrast, in Gpl only the epenthesis is possible.

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\* This article is based on the paper presented at FASL 20 in which also Polish and Serbo-Croatian data regarding “irregular” vowel-zero alternations were analysed. This original paper was co-authored by Tobias Scheer and Attila Starčević. The Polish part of the original paper, in which two types of alternating vowels, i.e. lexically present and epenthetic, is discussed, is developed in Scheer (2012a,b). I would like to thank an anonymous reviewer for helpful suggestions.

(1)	Nsg: CL#	Nsg: CeL#	Gpl: CeL#	gloss
	mysl	osel (Gsg: osl-a)	vesel (Nsg: vesl-o)	mind, donkey, oar
	trotl	kotel (Gsg: kotl-e)	metel (Nsg: metl-a)	josser, pot, broom

This contrast between the Nsg and the Gpl becomes more obvious when it is viewed from a diachronic perspective. The vowels which occur in the final CLs have different origins: some of them are inserted in original consonant clusters, some of them just continue Common Slavic high vowels, called yers. What is intriguing in this case is that their distribution follows a difference between both morphological categories. As examples in (2) illustrate, none of the epenthetic vowels which occur in Gpl have CS origin. Furthermore, the data in (2) show that both zero case markers evolved from CS yers.<sup>1</sup>

(2)	Nsg: CeL#	Gpl: CeL#	gloss
	kotel	< tьl-ъ metel	< tl-ъ pot, broom
	kozel	< zьl-ъ žezel	< zl-ъ he-goat, sceptre
	orel	< rьl-ъ čisel	< sl-ъ eagle, number
	osel	< sьl-ъ šidel	< dl-ъ donkey, awl
	úhel	< gьl-ъ jiter	< tr-ъ angle, morning
	uzel	< zьl-ъ žeber	< br-ъ knot, rib
	uhel	< gl-ъ	coal
	uher	< gr-ъ	blackhead

Since the presence of epenthetic vowels, both etymological or non-etymological, before the Nsg zero is restricted to the closed set of CS stems, the pattern in (1) can be simplified: synchronically, the Nsg zero produces syllabic liquids, while the Gpl zero triggers epenthesis and not the other way round.<sup>2</sup> The productivity of this pattern is also

<sup>1</sup> The CS data are taken from Kopečný (1981).

<sup>2</sup> There exists a handful of other CL-stems that show an epenthetic vowel in the Nsg, e.g. *pytel* (Gsg *pytl-e*) ‘sack’, *kyčel* (Gsg *kyčl-e*) ‘hip’ or anthroponyms *Havel* (Gsg *Havl-a*), *Karel* (Gsg *Karl-a*), *Pavel* (Gsg *Pavl-a*). They do not have CS origin but they are already registered in the earliest Czech texts. The stem *datel* ‘woodpecker’ poses a special case

manifested by CL-stems which simultaneously take both zero allomorphs. In (3a) stems are shown, each of which has two different genders (depending on speaker's idiolect or sex of the referent). If a given stem is masculine, a zero appears in the Nsg and the final liquid is syllabic. However, if it is feminine, a zero is in the Gpl and *e*-epenthesis is triggered. The same behavior is shown by homonymous roots in (3b).

## (3) a. bi-gender stems

Nsg (masc.)	Gpl (fem.)	Nsg (fem.)	gloss
hadř	hader	hadr-a	rag
kreķř	kreker	krekr-a	cracker
knedļ	knedel	knedl-a	dumpling
kmotrř	kmoter	kmotr-a	godfather, godmother
magistrř	magister	magistr-a	master of arts
Petrř	Peter	Petr-a	anthroponym

## b. homonymous stems

Nsg (masc.)	Gpl (fem.)	Nsg (neu.)	gloss
centř	center	centr-um	centre pass, centre
metř	meter	metr-o	meter, underground
intrř	inter	intr-o	hostel, introduction
kvádrř	kváder	kvádr-o	block, suit
čudļ	čudel	čudl-a	knob, little fish

The epenthesis in the Gpl is absolutely regular, but only in clusters with final liquids. As shown in (4), other types of final CCs behave irregularly: they either host an epenthetic vowel or not. Moreover, some stems can also show both vocalized and unvocalized forms.

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because the original *e* changed from a stable vowel to an alternating; e.g. the original Gsg form *datel-a* changed to *datl-a*.

(4)	Gpl: CC#	Gpl: CeC#	gloss
	jurt	karet (Nsg kart-a)	yurt, card
	verv	barev (barv-a)	vim, colour
	krypt	kobek (kobk-a)	crypt, dungeon
	elips	kapes (kaps-a)	ellipse, pocket
	holb	holeb	pint glass
	jacht	jachet	yacht

Finally, the different types of consonant clusters show the different behavior not only in the Gpl, but also in the Nsg: CLs behave uniformly, i.e. the liquid becomes syllabic, otherwise the final cluster is either broken up with an epenthetic vowel or it is preserved; and as in the Gpl, doublets are also possible.<sup>3</sup>

(5)	Nsg: CC#	Nsg: CeC#	gloss
	pazneht	nehet (Gsg neht-u)	hoof, nail
	sulc	palec (palc-e)	aspic, thumb
	kalk	lilek (lilk-u)	calque, aubergine
	nerv	krev (krv-e)	nerve, blood
	herynk	herynek	herring
	rynk	rynek	market place

I propose an analysis of the Nsg-Gpl puzzle which explains why only final CLs behave uniformly and the same time contrastively, i.e. why in the Nsg they *always* display syllabic liquids, whereas in the Gpl they *always* host epenthetic vowels. A proposed analysis is based on two main assumptions. First, vowels that alternate with zero can have different lexical representations; cf. Bethin (1992) and Scheer (2012a,b) for Polish or Bethin (1979) for Serbo-Croatian. Second, also zero case markers can differ underlyingly; cf. Baylin & Nevins (2008) for Russian.

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<sup>3</sup> It should be noted that unlike epenthetic vowels in CLs these vowels are both etymological and non-etymological.

## 2. Why standard *yer*-based analyses fail

Epenthetic vowels in Slavic, i.e. those vowels which alternate with zero in particular morphemes, have been intensively analyzed in various linear and autosegmental frameworks (see the overview in Scheer & Ziková 2010). All of these analyses follow the essence of the Lower rule which was introduced by Lightner (1965): *all* vowels that alternate with zero are underlyingly yers, which vocalize *only* in presence of a following yer.

As we could see in the previous section, an alternating vowel that separates the stem-final cluster surfaces in both Nsg and Gpl; cf. examples in tables (4) and (5) above. Since vowels that alternate with zero are underlying yers and since yers surface only before yers, then both the Nsg and the Gpl zeros must be underlyingly yers. Furthermore, this standard yer-based analysis assumes not only both zero case markers to be yers lexically but also *all* alternating vowels. Hence all stems which show an epenthetic vowel in Gpl must have a yer in their lexical representation.

If both the Nsg and the Gpl zero are yers, then it cannot be phonology which is responsible for the contrasting behavior of final CLs. Generally, two non-phonological analyses are possible. The first possibility is an allomorphy for Nsg. In this case the Nsg zero would receive two phonologically distinct representations: it would be a yer when attached to stems with yers, but literally nothing when merging with CL-stems. The Gpl zero, on the other hand, would be an underlying yer in all circumstances. In that case CL-stems would occur in two different phonological environments in Nsg and Gpl respectively, which would be somehow responsible for their different phonological behavior.<sup>4</sup> The second possibility is a readjustment rule associated to the Gpl yer which would insert yers in stem-final CLs. Neither of these analyses however explains why only just CLs, but not other types of consonant clusters behave uniformly.

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<sup>4</sup> Bailyn & Nevins (2008:285) propose an allomorphy along the same lines for the Nsg zero in Russian. They however do not indicate how allomorph selection works: they only mention a minimal pair /zv'er'-Ø-ɛ/ and /dv'er'-Ø-Ø/ without any further comments.

### 3. Strict CV analysis: a problem with final branching onsets

The newly discovered pattern thus questions the essence of the standard yer-based approach to Slavic vowel-zero alternations according to which all alternating vowels must be recorded lexically. Since the presence of alternating vowels in CLs is absolutely predictable, there is no reason to put them into the lexicon: they are genuine epenthetic vowels which are inserted during phonological computation in order to repair an ill-formed structure (i.e. an unlicensed branching onset as I argue below).<sup>5</sup>

According to their behavior in Gpl thus three types of stems ending in consonant clusters can be identified: a) stems without a yer, i.e. preserving CCs in Gpl (e.g. Gpl *jurt*, Nsg *jurt-a*), b) stems whose final cluster hosts a yer, c) CL-stems whose final cluster is broken up with an epenthetic vowel; the last two types display an alternating vowel in the Gpl form: *karet* (Nsg *kart-a*) and *vyder* (Nsg *vydr-a*).

This three-way typology can be appropriately expressed in strict CV vocabulary (Scheer 2004). As autosegmental representations in (6) show, a nucleus which separates the stem-final cluster has a different phonological status. In stems like *kart-a* – *karet* it hosts a lexically floating vowel (6a). In non-vocalizing stems like *jurt-a* – *jurt* and CL-stems like *vydr-a* – *vyder*, on the other hand, the cluster internal nucleus is lexically empty. Why only in the latter case this nucleus is target of epenthesis follows from the fact that CLs form branching onsets.

(6) a. <i>kart-a</i> , <i>karet</i>	b. <i>jurt-a</i> , <i>jurt</i>	c. <i>vydr-a</i> , <i>vyder</i>
C V C V C V	C V C V C V	C V C V C V
k a r e t	j u r t	v y d < r

Scheer (2004: §34, 2009) claims that branching onsets differ from coda-onset clusters in that their consonants contract a lateral relation

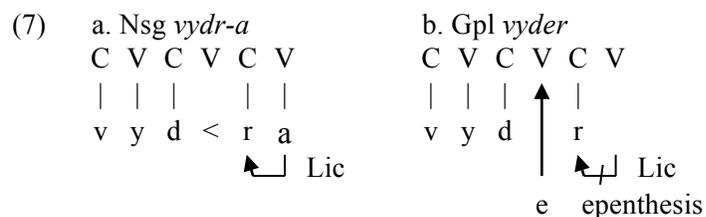
<sup>5</sup> The lexical uniformity of vowel-zero alternations has been already questioned by Bethin in her papers on Serbo-Croatian (1979) and Polish (1992). According to Bethin two types of alternating vowels must be distinguished: yers which are present in native vocabulary and epenthetic vowels that occur in loanwords. Scheer (2012a,b) however argues that the distinction between yers and epenthetic vowels in Polish does not pattern with the native-loan opposition.

headed by the liquid; it is marked by “<” in (6c). The solidarity of this cluster is manifested by the fact that the empty nucleus enclosed in a CL is invisible not only for phonetics (it is unpronounced), but also for phonology.

In a strict CV theory, distribution of empty nuclei is regulated by an inter-nuclear lateral relation called *government*: an empty nucleus must be governed by the following nucleus. Only in this case can it be unpronounced, otherwise it must receive some melody. Final empty nuclei (FEN), which are assumed to follow all final consonants, are governed parametrically: in Czech, which features word-final codas, they are governed. By contrast, empty nuclei in branching onsets escape from government: they are unpronounced because the head-complement relation is set between the liquid and the preceding consonant. Moreover, empty nuclei which occur in CLs cannot be the target of any phonological process, including epenthesis. A fact that epenthesis takes place in Gpl thus indicates that branching onsets cannot be maintained in word-final position, i.e. they cannot be licensed by FENs.

Cyran (2003, 2010) claims that consonant clusters must be licensed by following nuclei. Whether a given nucleus is strong enough to license a particular consonant cluster is defined by parameter setting. Cyran assumes that the licensing strength is a scalar feature and distinguishes four nuclear categories which occupy different positions in a universal licensing hierarchy: full nuclei > nuclei with schwa > final empty nuclei > internal empty nuclei. The licensing hierarchy predicts that nuclei associated to a segmental level are universally more capable to license than empty nuclei. Not only nuclear categories, but also both main types of consonant clusters stay in a hierarchical relation where a branching onset is weaker than a coda-onset cluster (i.e. LC > CL) which means that the former is more difficult to be licensed than the latter.

From the perspective of two hierarchies at hand, stem-final CLs occur in a phonologically adverse environment in the Gpl: a FEN is too weak to license a branching onset. Being unlicensed, the final branching onset is broken up which means that its nucleus is made accessible to epenthesis (7b). In the rest of paradigm cells, on the other hand, the stem’s FEN is merged with a case-marking vowel. In that case it becomes strong enough to license and the stem-final CL is thus preserved (7a).



Having introduced a syllable structure for CL-stems, let us return to the main issue which is their contrasting behavior in the Gpl and the Nsg. In what follows I argue that an epenthesis in the Gpl and a syllabic liquid derivation in the Nsg both represent two sides of the same coin: they both react to the situation where a branching onset cannot be licensed word-finally.

Scheer (2004) claims that syllabic consonants branch on a neighboring nucleus which accounts for their peculiar features: their phonetics is consonantal (they are articulated the same way as their non-syllabic cousins), but phonologically they behave as vowels (e.g. can bear stress). What kind of consonants can branch and where is defined parametrically. In Czech only liquids are able to branch, i.e. only liquids can be syllabic. Furthermore, Scheer (2009) develops an analysis of syllabic consonants in Czech according to which liquids branch to their right in order to save a branching onset in which they are involved. The main argument that syllabic liquids are syllabic because they are heads of branching onsets is the fact that non-vowel-adjacent liquids are never syllabic word-initially: in stems like *rtut'* 'mercury' or *lkát* 'to lament', the initial liquids do not form branching onsets hence they have no reason to branch to their right.

In the Nsg *bobr* 'beaver' (8a), the liquid branches to the FEN, creating a full nucleus which in turn licenses the final CL. In (8b), where the structure of Gsg *bobr-a* is shown, the stem-final CL is licensed by the case marking *a* associated with the FEN.

- (8) a. Nsg *bobr*                      b. Gsg *bobr-a*  
 C V C V C V                      C V C V C V  
 | | |    /                      | | |    | |  
 b o b < r                      b o b < r a  
    ↖ Lic                      ↖ Lic

The analysis of Nsg and Gpl forms, which we have developed so far, explains why final CLs behave uniformly in comparison with other types of final CCs: because only CLs have an uniform lexical representation; representation of other types of CCs, i.e. whether they include a yer or not, is a matter of idiosyncrasy. This analysis however says nothing why CLs being lexically identical produce different structures in the Nsg and the Gpl respectively. I argue that the reason is that stem-final CLs occur in two different phonological contexts in these two morphological categories.

Recall that in the Nsg liquids become syllabic. Translated into strict CV vocabulary, it means that they branch in order to create good licensors of final branching onsets: the Nsg zero is literally nothing, hence in the Nsg stem-final CLs are followed by FENs which are proper targets of liquid spreading. In Gpl the same scenario does not work because the FEN is occupied by a yer: the Gpl zero is a yer lexically which enters the FEN and produces an obstacle to liquid branching.

As shown in (6a), where a representation of the vocalizing LC-stem *kart-a – karet* is depicted, yers are lexically floating vowels. Their association to their syllabic constituent, i.e. their phonetic realization, depends on government: yers associate only if their nucleus is not governed. Governed yers, on the other hand, cannot associate, i.e. cannot be pronounced. Since in Czech all FENs are governed, then the final yer in Gpl is not pronounced; its presence however prevents the final liquid from spreading (9a). The final CL thus appears unlicensed; as a consequence its solidarity breaks down and its nucleus is filled by an epenthetic vowel (9b).

- (9) a. Gpl *vyder*  
(before computation)  
C V C V C V  
| | | |  
v y d < r e
- b. Gpl *vyder*  
C V C V C V  
| | | |  
v y d r e  
↑  
e epenthesis  
Lic

On the other hand, derivation of CC-stems without final liquids depends on whether their final clusters are lexically separated by floating vowels or not. In non-vocalizing stems like *jurt-a – jurť*, the cluster internal nucleus is empty hence it is governed by the FEN (10b). In vocalizing stems this nucleus hosts a floating vowel which cannot be governed by the FEN; being ungoverned the cluster internal floating vowel thus associates with a segmental level, i.e. realizes phonetically (10a).<sup>6</sup>

- (10) a. Gpl *karet* Gov  
C V C V C V  
| | | |  
k a r e t e
- b. Gpl *jurt* Gov  
C V C V C V  
| | | |  
j u r t e

To sum up, the contrasting behavior of CL-stems in the Nsg and the Gpl results from the fact that the Nsg and the Gpl zero allomorphs have different lexical representations: the former is literally nothing, whereas the latter is a yer, i.e. a lexically floating vowel.

#### 4. Diachronic evolution

As has been mentioned, both zero allomorphs in question are assumed to have evolved from CS yers; cf. examples in table (2) above. A question

<sup>6</sup> Stems that show both vocalized and unvocalized forms must have two different lexical representations: one with a floating vowel, one with an empty nucleus; see also Scheer (2012a,b) where analogical doublets in Polish are discussed.

thus arises whether the evolution of different underlying structures for the Nsg and the Gpl is related to the phonological changes which affected CS yers.

Recall that our main argument that the Nsg and the Gpl zeros differ underlyingly is based on the contrasting phonological behavior of CL-stems which can however be observed only from the mid-15th century. The loss of yers is dated to 10th-12th centuries (e.g. Vondrák 1906: 171ff) and the earliest texts written in Czech come from the turn of the 13th and 14th centuries. These early Old Czech (OCz) texts show that the loss of case marking yers produced the same result: in both cases structures with so-called trapped liquids were derived; e.g. CS *bobr-ъ* > OCz *bobr* ‘beaver, Nsg’, CS *vydr-ъ* > OCz *vydr* ‘otter, Gpl’.

In early stages of OCz, i.e. till the mid-15th century, there exist two types of non-vowel-adjacent liquids: trapped and syllabic. While the latter continue CS yer-L clusters (e.g. CS *sbrn-a* > OCz *sřn-a* ‘doe, Nsg’), the former appear in place of CS L-yer strings (e.g. CS *krbst-a* > OCz *krst-a* ‘baptism, Gsg’). The main criterion how to identify the status of OCz liquids is whether they are counted in verse (syllabic) or not (trapped); see Gebauer (1963: 59ff).<sup>7</sup> As examples from early OCz poetry indicate, all liquids in final CLs were really invisible for versification in both Nsg and Gpl forms.

The fact that CL-stems behaved the same way in Nsg and Gpl however does not necessarily mean that both zero desinences had to be lexically identical in early OCz. In the previous section I have argued that two phonological processes which occur in Nsg and Gpl, i.e. syllabic liquid derivation and epenthesis, are both a reaction to a fact that branching onsets are ungrammatical word-finally. Expressed in strict CV vocabulary it means that CLs cannot be licensed by unpronounced final nuclei, regardless whether they are empty (as in the Nsg) or host a floating melody (as in the Gpl). From this perspective the diachronic change in the behavior of CL-stems (Nsg *bobr* > *bobr*, Gpl *vydr* > *vyder*)

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<sup>7</sup> In Scheer (2004:§240) three other criteria are established: a) only syllabic consonants can bear stress, b) trapped, but not syllabic consonants are transparent for voicing, c) only trapped consonants provoke vocalization of preceding alternation sites. As for the first two criteria, they are inapplicable to OCz because neither stress nor obstruent voicing are marked orthographically in OCz. The last criterion, which in fact concerns (non)-vocalisation of prefixes, is disputable because vowel-zero alternations in prefixes are more irregular than those in roots and suffixes; see also Scheer (2009: 411, ft. 2).



traditionally assumed, one can wonder why these yers underwent different phonological changes: the Nsg yer was deleted at all (as is expected by Havlík's Law) while the Gpl yer was transformed into a floating segment. A possible explanation could be that both case markers differed underlyingly already in Common Slavic. This hypothesis is supported by the fact that the CS yer markers themselves are assumed to have a different Indo-European origin; see Bethin (1979: ft. 2) where alternative analyses found in the diachronic literature are summarized.

## 5. Conclusion

In this paper two main assumptions of the standard Lower-based analyses of Slavic vowel-zero alternations have been questioned: 1. both the Nsg and the Gpl zeros are lexically identical, 2. all alternating vowels are lexically identical as well. On the basis of developments of CL-stems, I have argued that the Nsg and the Gpl differ underlyingly when the Gpl is phonologically "bigger" than the Nsg.

The purely phonological analysis of the zero markers, which I have proposed for Czech, correspond to a widely accepted view that morphologically, the Gpl is more marked than the Nsg; see e.g. Jakobson (1957). The more marked morphological structure, i.e. the Gpl, is now more marked also phonologically: when comparing to the Nsg which has no phonological structure at all, the Gpl is at least a floating piece of melody.

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