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From the Editors

This is the second issue of volume 30, and it marks a significant moment for *JSL* in its goal to become open access. New regular issues are now available on *JSL*'s website in delayed open access—one year after publication—and extra issues are available on *JSL*'s website in immediate open access.

The issue also marks some changes in the editorial team. We welcome Boban Arsenijević, who joined the *JSL* team as an Associate Editor, and Laura Janda, who joined the *JSL* Editorial Board. We also thank our Associate Editor Catherine Rudin, who now also helps with language editing for the FASL extra issues of *JSL*, as well as Wayles Browne, Steve Franks, Laura Janda, and again Catherine Rudin, who have helped with pre-prepping accepted articles.

Furthermore, we thank everyone who has served as a reviewer for *JSL* submissions. This is a list of people who contributed reviews between 1 January 2020 and 31 December 2022 (listed in alphabetical order): Bistra Andreva, Andrei Antonenko, Boban Arsenijević, John Bailyn, Fyodor Baykov, John David Benjamin, Vladimír Benko, Štefan Beňuš, Maša Bešlin, Adam Bialy, Petr Biskup, Maria Bloch Trojnar, Andreas Blümel, Tatiana Bondarenko, Anna Bondaruk, Lena Borise, Krzysztof Borowski, Željko Bošković, Wayles Browne, Irina Burukina, Pavel Caha, Patricia Capredo-Hofherr, Malgorzata Ćavar, Božena Cetnarowska, Barbara Citko, Lada Dutkova Cope, Karen De Clercq, Marcel Den Dikken, Rick Derksen, Miloje Despić, Stephen M. Dickey, Tom Dickins, Mila Dimitrova Vulchanova, Mojmir Dočekal, Galina Dukova-Zheleva, Dominika Dziubała Szrejbrowska, Anna Endresen, Christine Ericsdotter, David Erschler, Maria Esipova, Daniel Finer, Steven Franks, Valerie Freeman, Ljudmila Geist, Maria Gouskova, Anna Grabovac, Jadranka Gvozdanović, Boris Harizanov, Ivona Ilić, Tania Ionin, Khalil Iskarous, Lukasz Jadrzejowski, Katarzyna Janic, Gaja Jarosz, Olga Kagan, Magdalena Kaufmann, Darya Kavitskaya, Mikhail Knyazev, Agata Kochanska, Anna Kohari, Ivona Kučerova, Anton Kukhto, Yuriy Kushnir, Mark Richard Lauersdorf, Jakob Lenardič, Alexander Letuchy, Barbara Lewandowska-Tomaszczyk, Beccy Lewis, Jadwiga Linde-Usiekniewicz, Tatiana Luchkina, Paulina Lyskawa, Ekaterina Lyutikova, Nerea Madariaga, Marek Majer, Anastasia Makarova, Marijana Marelj, Maja Marković, Franc Marušič, Ora Matushansky, Krzysztof Migdalski, Petra Mišmaš, Andrew Murphy, Tore Nesset, Stefan Michael Newerkla, Roumyana Pancheva, Andrija Petrović, Tatiana Philippova, Hagen Pitsch, Mariia Privizentseva, Ljiljana Progovac, Tijmen C Pronk, Zorica Puškar-Gallien, Ekaterina Rakhilina, Tom Roberts, Božena Rozwadowska, Marta Ruda, Catherine Rudin, Pawel Rutkowski, Amanda Saksida, Milan Sečujski, Irina Sekerina, Tamah Sherman, Vesela Simeonova, Radek Šimík, Marko Simonović, Danko Šipka, Svetlana Sokolova, Mateusz-Milan Stanojević, Sandra

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On the Syntax of the Russian Control Verbs *Pomoč'* 'Help' and *Pomešat'* 'Hinder'*

Irina Burukina

Abstract: This paper examines sentences with the verbs *pomoč'* 'help' and *pomešat'* 'hinder' in Russian and demonstrates that, although they are usually listed among object control predicates, these verbs appear in a wide range of constructions that cannot be accounted for by a straightforward control analysis. To explain the distribution of *pomoč'* and *pomešat'*, I argue that they are, in essence, ditransitive, similarly to 'give' or 'send': they require a Goal (a person or a situation that will be helped/hindered) and a Theme headed by a silent noun HELP/HINDRANCE. A dative DP, either [+sentient] or eventive, a subjunctive *čtoby*-clause, or a non-finite clause with an overt subject, when present, should be analyzed as a Goal. A controlled infinitival clause is merged as a modifier within the Theme NP. The approach is extended to control collocations such as 'give a chance'. It further offers an opportunity to develop a uniform structural representation for various verbs of object control that will reduce the differences between them to particular properties of the Theme.

Keywords: object control, argument structure, ditransitive, applicative, adjunct control, implicit arguments, Russian

1. Introduction

In this paper I present a thorough examination of the Russian predicates *pomoč'* 'help' and *pomešat'* 'hinder'. As they regularly co-occur with a DP argument

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and a non-finite clause, *pomoč'* and *pomešat'* are traditionally listed among object control verbs, such as implicatives[1] ('force', 'compel') or mandatives ('order'), and their distinctive semantic and syntactic behavior remains overlooked. Unlike other control predicates, *pomoč'* and *pomešat'* allow an unusually broad range of syntactic dependents, as illustrated in (1) below: they combine with dative [+sentient] Goals, dative eventive DPs, optional non-finite clauses with a PRO subject, subjunctive *čtoby*-clauses, and PPs.[2] As I further show, these verbs can also co-occur with non-finite saturated clauses with an overt DP subject, (1c), a property that has not been previously discussed in the literature.[3]

(1) a. Maša pomogla mne/rostu prodaž.
Masha helped I_{DAT} $growth_{DAT}$ $sales_{GEN}$
'Masha helped me/the growth of sales.'

b. Maša pomogla mne [PRO kupit' knigi] / [v pokupke knig].
Masha helped I_{DAT} buy_{INF} books in $buying_{PREP}$ $books_{GEN}$
'Masha helped me to buy books.'

c. Maša pomogla [prodažam vyrasti] / [čtoby prodaži vyrosli].
Masha helped $sales_{DAT}$ $grow_{INF}$ so.that sales $grow_{SUBJ}$
'Masha helped the sales to grow.'

Upon a closer look at the dependents listed above, the following pattern emerges. First, the dependents divide into arguments (DPs and saturated CPs, which include subjunctive *čtoby*-clauses and infinitival clauses with a DP subject) and properties (PPs and infinitival clauses with a controlled subject). Sec-

[1] A predicate is classified as "implicative" when the following requirement is fulfilled: the embedded proposition is true if the sentence with a matrix implicative is true (Karttunen 1971).

(i) a. John forced Bill to wash the dishes (→ Bill washed the dishes)
… #but Bill didn't. – implicative

b. John asked Bill to wash the dishes (↛ Bill washed the dishes)
… but Bill didn't. – non-implicative

[2] The original examples presented in the paper were elicited from nine monolingual native speakers of Russian ranging in age from 27 to 45 years old.

[3] The following abbreviations are used in the glosses: ACC = accusative, APPL = applicative, DAT = dative, GEN = genitive, INF = infinitive, INST = instrumental, NEG = negation, NOM = nominative, POSS = possessive, PREP = prepositional case, PST = past tense, SG = singular, SUBJ = subjunctive.

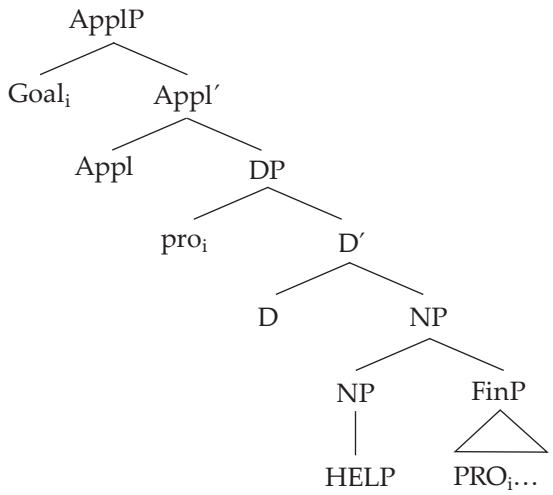
ond, the arguments cannot co-occur, which suggests that they compete for the same structural/thematic position. All this makes *pomoč'* and *pomešat'* stand out among the control predicates and gives rise to the following research questions: How do we account for the unusual properties of these verbs? Do constructions with *pomoč'* and *pomešat'* have a completely unique structure, and if so, why? Or can they still be brought together with some other clause-embedding predicates?

Addressing these questions, I develop a novel analysis whereby *pomoč'* and *pomešat'* are ditransitive constructions that involve an abstract verb GIVE, a Goal, and a Theme headed by a silent noun HELP/HINDRANCE, which I refer to as H-noun. The Goal is a person or a situation toward which the Agent directs their efforts; it can be expressed by a dative [+sentient] DP ($Goal_{Person}$), or by an eventive DP or fully saturated clause ($Goal_{Situation}$). Following Pylkkänen's (2008) analysis for *give*-type verbs across the world's languages, I assume that the Goal and the Theme are projected as arguments of a low applicative head that denotes the relation "to-the-possession"; the ApplP is then merged as a complement of GIVE, (2).

(2) $[_{VP}$ GIVE $[_{ApplP}$ Goal $[_{Appl'}$ Appl $[_{DP}$ HELP/HINDRANCE]]]]
DAT

A controlled infinitival clause and a PP, when present, should be analyzed as modifiers within the Theme, (3). Obligatory control into the embedded adjunct clause is established between the matrix Goal and the embedded PRO via the implicit possessor, *pro*.

(3)



The proposed analysis accounts for the peculiar properties of *pomoč'* and *pomešat'*, including the variety of possible dependents, the optionality of embedded clauses, the predicative nature of control established between the matrix Goal and the embedded PRO, and the dative case assignment. It can further be extended to similar expressions with a ditransitive verb and a controlled clause, such as *okazat' pomošč'* 'provide help' and *dat' šans/vozmožnost'* 'give a chance/opportunity', which are rarely discussed in the literature.

The paper solves a specific empirical puzzle in Russian and contributes to the general discussion of clausal subordination and the nature of control predicates. It also addresses such topics as the distribution of dative DPs, the property/proposition distinction for non-finite clauses, obligatory control into adjuncts, and structural presence of covert arguments.

The paper continues as follows. Section 2 examines sentences with a dative DP and an embedded non-finite clause and formulates the main research questions. Section 3 presents a novel analysis for *pomoč'* and *pomešat'* as ditransitive verbs. Section 4 discusses the adjunct/argument status of the dependents of *pomoč'* and *pomešat'*. Section 5 concludes the paper.

2. *Pomoč'* or *pomešat'*, a Dative DP, and a Non-Finite Clause

2.1. Dative DP: A Matrix Goal or an Embedded Subject

Most frequently,[4] *pomoč'* and *pomešat'* appear together with a dative DP and an embedded non-finite clause, similarly to the English verb *help*.[5] In this section, I examine such examples in detail and demonstrate that they are ambiguous between the following two structures: (i) the dative DP is a matrix dependent that controls a PRO subject in the embedded infinitival clause, which is a property-type FinP, or (ii) the dative DP is an argument of the infinitival predicate, the embedded subject itself, while the non-finite clause is a fully saturated CP.

The dative DP that accompanies *pomoč'* or *pomešat'* usually refers to a person who is helped in or prevented from doing something; as I further demon-

[4] From the Russian National Corpus, search results for the sequence *pomoč'/pomešat'* and (i) dative + infinitive yield 10,681 entries, while the sequence with (ii) dative + *in*-PP appears in 1,750 entries.

[5] The subject in such sentences is interpreted as either an Agent or a Cause, as in (i).

(i) Rusalka /pogoda pomogla kapitanu izbežat' ataki
mermaid$_{NOM}$ weather$_{NOM}$ helped captain$_{DAT}$ avoid$_{INF}$ attack$_{GEN}$
piratov.
pirates$_{GEN}$
'The mermaid/weather helped the captain to avoid pirates' attack.'

strate in §4, the dative DP can also denote a situation that the Agent intends to make (im)possible. Throughout the paper, I refer to such passive participants as **Goal**, or more precisely, $\text{Goal}_{\text{Person}}$ or $\text{Goal}_{\text{Situation}}$, as I draw a parallel between them and Goal arguments in ditransitive *give*-type constructions (§3). They can also be understood as Patients, using the term in its broad meaning, as described in Andrews 1985, Dowty 1991, A. Williams 2015, among others.

When used together with a non-finite clause, the dative DP must be coreferent with the understood subject of the infinitive; consider an example in (4) that shows that only a local and c-commanding antecedent for the embedded subject is acceptable.

(4) Marina_{k} skazala, čto Sveta_{j} pomogla [druzjam $\text{Peti}_{m}]_{i}$ $ec_{i/*j/*k/*m}$
Marina said that Sveta helped friends_{DAT} Petja_{GEN}
sdat' ékzamen.
pass_{INF} exam
'Marina said that Sveta had helped Petja's friends to pass the exam.'

In the literature, *pomoč'*, *pomešat'*, and their translation equivalents in other languages are usually listed among object control verbs; see Arylova 2006 on Russian and Sabel 1996 and Davies and Dubinsky 2004 on Germanic languages. I challenge this assumption and argue that sentences with *pomoč'* or *pomešat'* and an infinitive are ambiguous between obligatory control and overt embedded subject analyses. That is, the dative DP is either a matrix Goal or an embedded argument located within the non-finite clause.

To begin with, let us discuss the standard diagnostics used to determine whether a DP is an argument of the embedded predicate: the selection test, the idiom chunk test, and the embedded passivization test. In the case under consideration, the results for these tests are mixed; the dative DP can but does not always have to be interpreted as an embedded argument.

First, in the absence of an embedded clause, the Goal must be either a [+sentient] DP or an event noun, (5a–b).[6] Conversely, the dative DP used together with a non-finite clause does not have to comply with this restriction; as shown in (5c), it can be [−sentient] and non-eventive, depending on the selectional properties of the embedded predicate.

(5) a. My pomešaem Pete /[stroitel'stvu zavoda].
we hinder Petja_{DAT} $\text{construction}_{DAT}$ factory_{GEN}
'We will hinder Petja/construction of a factory.'

[6] In this section, I focus on $\text{Goal}_{\text{Person}}$, to provide better contrast, but see §4 for a discussion of $\text{Goal}_{\text{Situation}}$.

(5) b. *My pomešaem **zdanijam**.
we hinder buildings$_{DAT}$

c. My pomešaem **zdanijam** byt' dostroennymi.
we hinder buildings$_{DAT}$ be$_{INF}$ complete$_{PTCP}$
'We will prevent the buildings from being constructed.'

Second, sentences with *pomoč'* or *pomešat'* and an embedded idiom, such as *černaja koška probežala meždu nimi* 'the black cat ran between them' (idiomatic reading: 'they quarreled'), are ambiguous between literal and idiomatic interpretations, (6). An expression retains its idiomatic reading only if all the components are base-generated together (Davies and Dubinsky 2004). Therefore, the ambiguity of (6) suggests that it has two corresponding structures: the DP 'black cat' is projected either in the matrix clause or by the embedded predicate.

(6) Ja pomešal černoj koške probežat' meždu nimi.
I hindered black cat$_{DAT}$ run$_{INF}$ between them
Literally: 'I prevented the black cat from running between them.'
Idiomatic, available: 'I prevented them from quarreling.'

Third, constructions with *pomoč'* and *pomešat'* often, but not always, pass the embedded passivization test, which is based on the idea that a Voice transformation does not affect the truth condition of the clause and yields the same interpretation, as in *Mary baked the cake* = *The cake was baked by Mary*. A sentence with *pomoč'* or *pomešat'* and embedded passive Voice, as in (7a), can but does not have to receive the same reading as a parallel sentence with embedded active Voice, (7b). When it does, the dative DP must belong to the embedded infinitive, and the set of participants in the two clauses does not change. When the readings differ, it is because the dative DP is a dependent of the main predicate, a Goal: 'boy' in (7a) but 'wizard' in (7b). Importantly, the semantic identity becomes obligatory if the dative DP is infelicitous as a matrix Goal, i.e., if it is not [+sentient] or eventive, (7c–d).[7]

[7] The unambiguous object control predicates in Russian include, for instance, *vynudit'* 'force'. Such verbs show negative results for the overt embedded subject tests discussed in this section.

(i) a. Ja vynudil černuju košku probežat' meždu nimi.
I forced black cat$_{ACC}$ run$_{INF}$ between them
Only: 'I forced the black cat to run between them.'
Idiomatic, not available: 'I forced them to quarrel.'

b. *Maz' vynudila ranu zalečit'sja kak možno bystree.
ointment forced wound$_{ACC}$ heal$_{INF}$ as possible faster

(7) a. My pomešaem **mal'čiku** byt' ubitym volšebnikom.
we hinder boy$_{DAT}$ be$_{INF}$ killed$_{PTCP}$ wizard$_{INST}$
'We will prevent the boy from being killed by the wizard.'

b. My pomešaem **volšebniku** ubit' mal'čika.
we hinder wizard$_{DAT}$ kill$_{INF}$ boy$_{ACC}$
'We will prevent the wizard from killing the boy.' (≠/= a)

c. Maz' pomožet [**rane** zalečit'sja kak možno bystree].
ointment help wound$_{DAT}$ heal$_{INF}$ as possible faster
'The ointment will help the wound to heal as soon as possible.'

d. Maz' pomožet [zalečit' ranu kak možno bystree].
ointment help heal$_{INF}$ wound$_{ACC}$ as possible faster
'The ointment will help to heal the wound as soon as possible.' (= c)

The mixed results of the tests discussed above point to the same conclusion: sentences with *pomoč'* or *pomešat'* are ambiguous between the two structures schematized in (8).

(8) a. [*pomoč'/pomešat'* DP$_{DAT.i}$ [PRO$_i$ infinitive]]

b. [*pomoč'/pomešat'* [DP$_{DAT}$ infinitive]]

If the dative DP is [+sentient] and can be interpreted as a matrix Goal, it behaves as either a matrix or an embedded constituent, (8a) and (8b), respectively. If the DP can be interpreted only as the embedded subject—when it is inanimate and non-eventive or a part of an idiomatic expression—it remains in the lower clause and does not show signs of movement.[8]

Consider, for example, the placement of adjuncts. In Russian, an adjunct must be merged within the same clause as its predicate, and scrambling across a clausal boundary is limited to the A-bar movement from the embedded clause into a peripheral focus position (Bailyn 2003). Thus, a modifier can help us locate the clausal boundary, as exemplified in (9) for an embedded purpose clause; here, the AP *ran'še vsex* 'first' unambiguously modifies only the main event or only the embedded event when it is placed between main or embedded dependents, respectively, and only becomes ambiguous if it is on the edge of the infinitival clause.

[8] The distribution of adjuncts and the dislocation/ellipsis data discussed here pose a problem to a potential raising analysis; I found no evidence that the embedded DP subject undergoes A-movement into the matrix clause.

(9) a. Petja prišel **ran'še vsex** k Maše [uznat' poslednie
Petja came earlier all to Masha learn$_{INF}$ latest
novosti].
news
Only: 'Petja came to Masha first to learn about the latest news.'

b. Petja prišel k Maše [uznat' **ran'še vsex** poslednie
Petja came to Masha learn$_{INF}$ earlier all latest
novosti].
news
Only: 'Petja came to Masha to learn about the latest news first.'

c. Petja prišel k Maše **ran'še vsex** uznat' poslednie
Petja came to Masha earlier all learn$_{INF}$ latest
novosti.
news
(i) 'Petja came to Masha first to learn about the latest news.'
(ii) 'Petja came to Masha to learn about the latest news first.'

As shown in (10) below, in sentences with *pomoč'* or *pomešat'*, an adjunct that precedes the dative DP can modify either the matrix or the embedded predicate.

(10) a. Volšebnik pomog nemedlenno Pete popravit'sja.
wizard helped immediately Petja$_{DAT}$ get.better$_{INF}$
(i) 'The wizard helped Petja to immediately get better.'
(ii) 'The wizard immediately helped Petja to get better.'

b. Volšebnik pomog nemedlenno rane zažit'.
wizard helped immediately wound$_{DAT}$ heal$_{INF}$
(i) 'The wizard helped the wound to heal immediately.'
(ii) 'The wizard immediately helped the wound to heal.'

A matrix adjunct can follow the dative DP only when the latter can be interpreted as the matrix Goal, (11a). If the dative DP denotes, for example, an inanimate object (that is, if it is illicit as a Goal$_{\text{Person}}$ or Goal$_{\text{Situation}}$), the adjunct must be interpreted within the scope of the non-finite clause, which in (11b) leads to a semantic anomaly.

(11) a. Želaju, čtoby vy pomogli rebenku **vse** **vmeste**
wish$_{1SG}$ so.that you$_{PL}$ help$_{SUBJ}$ child$_{DAT}$ all together
[adaptirovat'sja].
adapt$_{INF}$
'I wish that you would all together help the child adapt.'

b. #Ministry pomogli [stroitel'stvu **vse** **vmeste**
ministers helped construction$_{DAT}$ all together
zakončit'sja vovremja].
finish$_{INF}$ in.time

Another piece of evidence for the structural ambiguity outlined in (8) comes from the behavior of the dative DP under dislocation and ellipsis. A dative DP that is felicitous only as an embedded argument cannot be separated from the rest of the non-finite clause, for instance, in pseudoclefts, as in (12a), or under polarity ellipsis (Kazenin 2006), as in (12b).

(12) a. *V čem maz' pomogla **rane**, tak éto zažit'.
in what ointment helped wound$_{DAT}$ so that heal$_{INF}$
Intended: 'What the ointment helped to do was for the wound to heal.'

b. *Maz' pomogla **rane** zažit', a bal'zam
ointment helped wound$_{DAT}$ heal but balm
sinjaku net.
bruise$_{DAT}$ no
Intended: 'The ointment helped the wound to heal, but the balm did not [help] the bruise [to heal].'

A dative DP suitable as a Goal is not bound by such a restriction, as shown in (13) (judgments of (13a) vary, as indicated by the % sign).

(13) a. %V čem maž' pomogla **mne**, tak éto zalečit' ranu.
in what ointment helped I$_{DAT}$ so that heal$_{INF}$ wound$_{ACC}$
'What the ointment helped me to do was to heal the wound.'

b. Maša pomogla **Pete** pobedit', a Anna **Kole** net.
Masha helped Petja$_{DAT}$ win$_{INF}$ but Anna Kolja$_{DAT}$ no
'Masha helped Petja to win, but Anna did not [help] Kolja [to win].'

2.2. Infinitival Clause: A Property or a Proposition

The data examined in §2.1 show that the combination of a dative DP and an embedded non-finite clause structurally corresponds either to a constituent with the dative DP merged outside of the infinitival construction, (14a), or to a single clause with an overt embedded subject, (14b).[9]

(14) a. [*pomoč'/pomešat'* $DP_{DAT.i}$ [PRO_i infinitive]]
b. [*pomoč'/pomešat'* [DP_{DAT} infinitive]]

Sundaresan and McFadden (2009) discuss PRO/DP alternation in non-finite clauses in several languages, including English, Irish, and Tamil, and they convincingly demonstrate that controlled and referential subjects are generally allowed in the same syntactic environment. In Russian the PRO/DP alternation is also attested in sentences with verbs of order and permission and deontic modals (Burukina 2019, 2020). Due to the limitations of space, I only give two examples with the Russian verb *razrešit'* 'permit' in (15); the availability of partial coreference in (15a) indicates the presence of PRO (Wurmbrand 2002), while the inanimate dative DP in (15b) must be analyzed as an embedded argument and is infelicitous as a matrix recipient of the permission.

(15) a. $Ivan_k$ razrešil $Pete_i$ [$PRO_{i+(k)}$ razojtis' v šest'].
Ivan permitted $Petja_{DAT}$ $disperse_{INF}$ in six
'Ivan permitted Petja to disperse at six.'
b. Direktor razrešil [večerinke prodolžat'sja do polunoči].
director permitted $party_{DAT}$ $continue_{INF}$ until midnight
'The director permitted for the party to continue until midnight.'

On the surface, constructions with *pomoč'* and *pomešat'* look very similar to the sentences with *razrešit'* 'permit' in (15); however, there are several crucial differences between these predicates. Unlike the latter, *pomoč'* and *pomešat'* do not involve deontic modality and are semantically closer to implicative verbs, such as *zastavit'* 'force'. Compared to the verbs of order and permission, *pomoč'* and *pomešat'* are more flexible in regard to their dependents; the embedded clause is optional, (16a), and the verbs are also compatible with eventive nominals and PPs, (16b). This is discussed in detail in §4.

[9] Following Greenberg (1985), Franks and Hornstein (1992), Moore and Perlmutter (2000), and Landau (2008), I assume that in (14b) the dative case is assigned to the embedded subject locally by an embedded functional head, i.e., the non-finite T/Fin. Alternatively, an ECM-type analysis may be proposed whereby the overt embedded subject receives the "matrix" dative case, normally assigned to the Goal, as in (14a).

(16) a. Petja pomog /#velel /#razrešil mne.[10]
Petja helped ordered permitted I_{DAT}
'Petja helped me.'

b. Petja pomog/*velel /*razrešil [moej sdače ékzamena].
Petja helped ordered permitted my $passing_{DAT}$ $exam_{GEN}$
'Petja helped me to pass the exam.'

The embedded non-finite clause with an overt DP subject is fully saturated and argument-like. Notice that the argument clause cannot co-occur with a [+sentient] or eventive Goal, (17).[11]

(17) a. Vrač pomog (*Pete) [rane zažit'].
doctor helped $Petja_{DAT}$ $wound_{DAT}$ $heal_{INF}$
'The doctor helped for the wound to heal.'

b. Zima pomešala (*stroitel'stvu) [zdaniju byt'
winter hindered $construction_{DAT}$ $building_{DAT}$ be_{INF}
dostroennym].
$complete_{PTCP}$
'Winter prevented the building from being constructed.'

Let us now look closer at the properties of the embedded non-finite clause with a controlled PRO subject. In the remaining part of this section, I will show that in the control configuration, *pomoč'* and *pomešat'* embed an unsaturated property-type clause (FinP);[12] this will become important later in

[10] In (16a) *Petja velel/razrešil mne* is allowed in a limited set of contexts under topic-drop, as in 'Why did you do this? Petja ordered/permitted me'. *Pomoč'* and *pomešat'* do not require for the omitted clause to be retrievable from the context.

[11] There is no evidence for the structural presence of a covert matrix Goal in (17) and it is not entailed. The standard diagnostics used to determine whether an argument is projected (Bhatt and Pancheva 2006) do not work for Russian; for instance, neither covert nor overt Goals can be modified by instrumental depictives, as shown in (i):

(i) $Petja_i$ pomog ec_k/$Ivanu_k$ $pjanym_{i/*k}$.
$Petja_{NOM}$ helped $Ivan_{DAT}$ $drunk_{INST}$
'Petja helped (Ivan) drunk.'

[12] Throughout the paper, I use the term "property" to refer to constituents of the type <e,<s, t>> and the term "proposition" to refer to fully saturated clauses of the type <s, t>, following Landau (2015). The terminology may appear to be unusual for a syntactic paper, however, it will become useful for distinguishing between the two types of dependents, namely, controlled infinitival clauses and infinitival clauses with a referential DP subject, respectively.

§3 for developing the analysis. I adopt the typology of control developed by Landau (2015), who examines obligatory control into complement clauses and proposes to split those into predicative complements and logophoric complements; the approach is extended to adjunct clauses in Landau 2017.

English *manage* and *force* and Russian *zastavit'* 'compel' are examples of predicative control verbs. Predicative embedded clauses are unsaturated FinPs; they contain an operator, namely, a PRO variable, and thus denote a property and must be predicated of a matrix argument. This is schematized in (18) for object control, where the controller and the FinP predicate together form a small clause (SC). Following Bowers (1993) and den Dikken (2006), I assume that small clauses are asymmetrical and that they are headed by a functional head—Rel(ator) or Pr(edication)—that takes the predicate as its complement and relates it to the subject in the specifier position. In the control sentences under consideration, the Rel head remains silent; however, as discussed in detail by den Dikken (2006), it can be spelled out as a particle, for instance, in such English examples as *I consider* [$_{SC}$ *him* ***as*** *my friend*].

(18) [$_{VP}$ *force/compel* [$_{SC}$ DP_i [$\emptyset_{Rel}$ [$_{FinP}$ PRO_i infinitive …]]]]
└predication┘

Logophoric control verbs include *intend* and *ask* in English and *velet'* 'order' in Russian. In case of a logophoric embedded clause, the FinP containing PRO is selected first by a special logophoric C head (Landau 2015). This C_{+log} introduces the context variables <SPEAKER, ADDRESSEE, TIME, WORLD> that depend on the content of the matrix clause. Either the speaker or addressee variable is syntactically projected in Spec, CP. The variable is bound by a matrix argument denoting an attitude holder or addressee (the controller), due to the attitude semantics of the main predicate (see below); at the same time, it is combined with the embedded FinP via predication and thus determines the reference of PRO. Unlike the property-type FinP, the result CP is fully saturated, a proposition; a simplified structure is given in (19), with the context variable denoted as *x*.

(19) [$_{vP}$ DP_i [$_{v'}$ v [$_{VP}$ *intend* [$_{CP}$ x_i [$_{C'}$ C_{+log} [$_{FinP}$ PRO_i infinitive …]]]]]]
└binding┘ └predication┘

The more complex syntactic structure in (19) corresponds to the attitudinal semantics of the logophoric control predicates. *Intend* and *ask* are attitude predicates, that is, they introduce an attitude context in which linguistic expressions are interpreted relative to the state of a participant in the reported situation and not relative to the actual world (Landau 2015: 18). Hence, the left periphery of the embedded clause is built up to accommodate the necessary context variables, whose value may change. In contrast, *manage* and *force* are

non-attitude predicates. To illustrate the difference, consider the following set of examples, adapted from Landau 2015.

(20) Context: Ralph is the new boss at Bill's office, but Bill does not know about it yet.

Bill forced/asked Ralph to sign the papers.
⇒ Bill forced/#asked the new boss to sign the papers.

(21) Context: Ivan does not know that Stepan is the new director.

Ivan	pomog/pomešal	Stepanu	podpisat'	dokumenty.
Ivan	helped hindered	Stepan$_{DAT}$	sign$_{INF}$	documents

'Ivan helped/hindered Stepan to sign the documents.'
⇒ 'Ivan helped/hindered the new director to sign the documents.'

In the scenario in (20), the second sentence follows naturally from the first one with *force* but not with *ask*, since in the latter case the denotation of 'the new boss' shall be determined based on Bill's knowledge. As further shown in (21), *pomoč'* and *pomešat'* in Russian belong to the non-attitude group of predicative control verbs.

The difference in the structural properties of the two types of control constructions further manifests itself in the (un)availability of partial or split coreference between the controller and the controlee. Predication between the embedded FinP and a matrix DP is always strict; thus, the controller and the controlee in (18) must have the same reference, (22a). Under the logophoric control, however, the reference of PRO is determined by the embedded *x* variable bound by a higher DP, (19); the general flexibility of binding allows for the coreference to be partial, (22b).

(22) a. *John managed to meet at 6.
b. John intended to meet at 6.

In Russian, one can use an embedded item that normally requires a plural subject to test whether the control is obligatorily exhaustive. Good candidates for this are *raz – sja* verbs (*rasxodit'sja* 'disperse', *razrugat'sja* 'quarrel') that require a semantically plural Agent and subject-oriented *together*-type modifiers that must be related to a plural DP. As shown in (23) on the following page, examples with *pomoč'* or *pomešat'*, a semantically/syntactically singular controller, and such an embedded component get low acceptability scores from native speakers.[13]

[13] A reviewer commented that, while they agreed that the sentences in (23) did not allow the split control interpretations, the partial control readings were still possible.

(23) a. *Ivan$_k$ pomešal direktoru$_i$ PRO$_{i+(k)}$ razojtis' v sem'.
Ivan hindered director$_{DAT}$ disperse$_{INF}$ in seven

b. *Direktor$_k$ pomog Ivanu$_i$ PRO$_{i+(k)}$ podgotovit' otčet
director helped Ivan$_{DAT}$ prepare$_{INF}$ report$_{ACC}$
vmeste.
together

c. Direktor$_k$ skazal/predložil Ivanu$_i$ PRO$_{i+(k)}$ podgotovit'
director told offered Ivan$_{DAT}$ prepare$_{INF}$
otčet vmeste.
report$_{ACC}$ together
'The director told/offered Ivan to prepare the report together.'

From this I draw the conclusion that in sentences with *pomoč'* or *pomešat'* and a controlled infinitival clause, the latter denotes a property and is suitable as a predicate/modifier, but not as an argument. The following questions are yet to be answered: How exactly are the Goal and the embedded clause brought together in (14a)? And how can we account for the incompatibility of a [+sentient] Goal with a fully saturated embedded clause, as in (17)? In addition to this, a successful analysis shall suggest a source for the dative case assigned to the Goal, especially taking into account that on the surface *pomoč'* and *pomešat'* resemble transitive verbs with only two dependent DPs, and those normally appear with a nominative subject and an accusative direct object. In the remainder of the paper, I will present a novel approach to *pomoč'* and *pomešat'* that provides answers to these questions.

However, the native speakers that I consulted do not share this intuition. At this point, I do not know to what this difference in the judgments can be attributed; note, however, that in colloquial Russian, constructions with predicates that are unanimously considered to allow only exhaustive control (aspectual verbs, etc.) can be coerced into having a partial control flavor, as in (i), depending on the context and prosody.

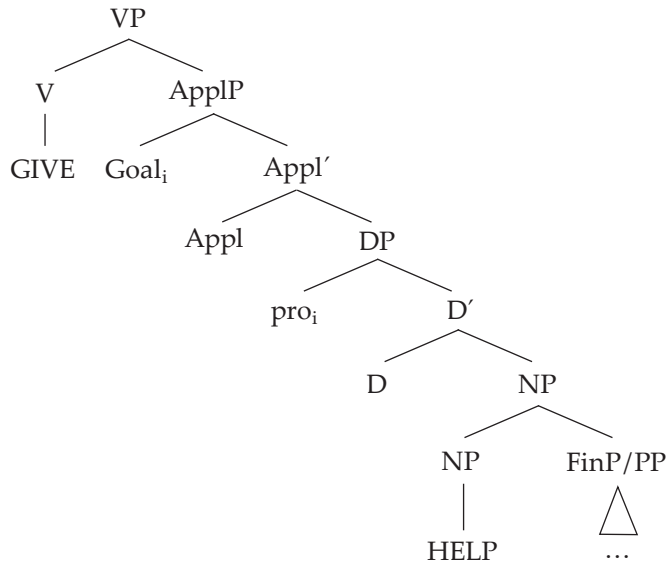
(i) Context: Masha and Ivan are siblings. Their mother wanted Ivan to do his homework on his own, without Masha's help.
No Maša, kak obyčno, načala delat' upražnenija VMESTE.
but Masha as usually began do$_{INF}$ exercises together
'But Masha, as always, began doing the exercises together (with Ivan).'

3. Developing the Analysis

3.1. Outline of the Proposal

The ultimate structure that I propose for all sentences with *pomoč'* or *pomešat'* is given in (24).[14]

(24)



The lexical verb *pomoč'/pomešat'* is a morphological realization of the combination of the abstract verb GIVE and a direct object headed by the silent noun HELP/HINDRANCE; I refer to it as H-noun. Thus, 'help someone' is structurally decomposed into 'give someone help', and 'hinder someone' into 'give someone hindrance'. As with the other ditransitive verbs of transfer, such as 'give', 'send', 'present', etc., *pomoč'* and *pomešat'* appear with a direct object (H-NP) and a Goal, and I assume that the two dependents are combined within an applicative phrase, as per Pylkkänen 2008 (see §3.2). The Goal does not have to be [+sentient]; this argument position can be occupied by an eventive noun or a fully saturated clause, for example, a *čtoby*-clause or an infinitival CP with a DP subject. Finally, a property-type controlled infinitival clause or an *in*-PP, when present, is introduced as a modifier within the H-NP; in §4.1 I

[14] I propose that control into the embedded non-finite clause (an adjunct inside the Theme DP) is established as Goal binds an implicit *pro* possessor within the Theme argument. It is Goal that becomes the antecedent for *pro* because of the "to-the-possession" relation established by the applicative head (Pylkkänen 2008); see §4.1 for a discussion.

elaborate on the mechanism of obligatory control into the adjunct, suggesting that it is established via the implicit possessor (*pro*) in the H-NP.

In what follows, I will discuss the components of this analysis one after another: (i) the decomposition of *pomoč'* and *pomešat'* into GIVE and an H-NP, and (ii) the argument/modifier status of the dependents.

3.2. *Pomoč'* and *pomešat'* as Ditransitive *give*-Type Verbs

I draw a parallel between *pomoč'* and *pomešat'* and ditransitive verbs of transfer, such as *give* and *send*, for which I adopt Pylkkänen's (2008) analysis in terms of low applicativization, (25).[15] The Theme (direct object) and the Goal (indirect object) are arguments of the low applicative head, which is a predicate interpreted as "to-the-possession"; see Soschen 2005 for a similar proposal for Russian and Dyakonova 2005, 2007 advocating the Goal-over-Theme analysis.

(25) $[_{VP}$ V $[_{ApplP}$ Goal $[_{Appl'}$ Appl Theme]]]

[15] For the sake of simplicity and in continuation with my previous research on ditransitives, in this paper I adopt a low applicative analysis and represent the Goal and the Theme as being related by the Appl head; in the conclusion, I further adapt the analysis to verbs of communication, order, and permission. However, an alternative approach to ditransitives has recently been proposed in the literature by Boneh and Nash (2017). They argue that some applied objects in the *give*-type constructions in Russian are introduced higher in the structure. In particular, they propose that several verbs, including *dat'* 'give', *pokazat'* 'show', and *napisat'* 'write', can be inserted into either of the following two underlying structures.

(i) a. $[_{VP}$ DP_{ACC} $[_{V'}$ V $[_{PP}$ $P_{Ø}$ DP_{DAT}]]]

b. $[_{ApplP}$ DP_{DAT} $[_{Appl'}$ Appl $[_{VP}$ V DP_{ACC}]]]

In (ia) the dative DP refers to the endpoint of the path of transfer, and it is merged low in the structure within a PP headed by a silent directional P. In (ib) the dative DP can refer to a Beneficiary, Maleficiary, etc., and it is introduced by a high applicative head. The difference in the structure thus gives rise to different interpretations; specifically, in the case of the DAT-over-ACC pattern, "the dative argument is interpreted as a person who is conscious of the benefit of acquiring [the Theme], and who might even previously wished for this state of affairs", with a possession reading also being entailed (Boneh and Nash 2017: 931). Sentences with *pomoč'* (and *pomešat'*, if 'benefit' is substituted with 'suffer') and more complex constructions, such as 'give a chance', match this description; importantly, from a syntactic point of view, in (ib) the Goal c-commands the Theme, similarly to (25). Due to the limitations of space, I shall refrain from entering into a detailed discussion of *give*-type verbs in general and, at this point, consider both analyses viable. For the purpose of the present study, nothing particular hinges on the choice of the approach and the proposed structure can easily be accommodated with the main components (decomposition of *pomoč'* and *pomešat'* and the presence of a silent H-NP Theme) intact.

It shall be mentioned that there is still no agreement in the literature as to the base position of the Goal arguments in Russian (and other Slavic languages). Thus, Bailyn (1995, 2010) attempts to apply the binding test and the depictive tests, initially proposed by Barss and Lasnik (1986), and argues that their results support the ACC-over-DAT configuration. However, Pereltsvaig (2001), Richardson (2007), and Dyakonova (2005, 2007) persuasively argue that, in *give*-type ditransitive constructions, the Goal argument is base-generated above the Theme. For instance, Dyakonova (2007) applies the subextraction diagnostic and demonstrates that, with respect to wh-movement, indirect objects pattern with specifiers (for example, external arguments), while direct objects pattern with complements. If, however, new pieces of support for the Theme-over-Goal base configuration are found, that will not undermine the main part of the analysis put forward in the present paper, that is, that *pomoč'* and *pomešat'* shall be decomposed into GIVE + HELP/HINDRANCE and that some apparent dependents of the main verb should be treated instead as modifiers within the Theme H-NP. For my analysis to work, the Goal argument must c-command the Theme at some point, to ensure that the former can bind the silent possessor within the latter (§4.1.2). At this point, it is irrelevant whether this happens already in the deep structure or after the Goal undergoes movement over the Theme (as per Bailyn 1995).

Adapting the structure in (25) to sentences with *pomoč'* or *pomešat'*, the Goal of *pomoč'* and *pomešat'* is comparable to the Goal of *give* and *send*; it is a participant toward which the Agent directs (i.e., transfers) their efforts. Similarly to other applied objects, the Goal is base-generated in the specifier position in the ApplP merged as the complement of the matrix verb.

Analyzing the Goal as a low applied object explains the fact that it must be dative and is never assigned accusative case, (26). Following Anagnostopoulou (2003), Cuervo (2003), Svenonius (2006), Wood (2010), Pineda (2014), and others, I argue that the dative case is uniformly assigned by an applicative head to its specifier.[16]

(26) a. My pomogli/pomešali kapitanu /*kapitana (spastis').
we helped hindered captain$_{DAT}$ captain$_{ACC}$ save.oneself$_{INF}$
'We helped/hindered the captain to save herself.'

[16] I remain agnostic regarding whether dative case on applied objects shall be treated as structural or inherent. In the first case, it could be said that the Appl head assigns dative in the Spec-Head configuration; see Koopman's (2006) suggestion that Spec-Head relations co-exist with downward Agree. In the second case, this dative could be compared to the inherent ergative arguably assigned by v to the external argument introduced in Spec, vP; see, among others, Legate 2002 and Aldridge 2004.

(26) b. My pomogli/pomešali prodaže /*prodažu zontov.
we helped hindered selling$_{DAT}$ selling$_{ACC}$ umbrellas$_{GEN}$
'We helped/hindered the selling of umbrellas.'

In a low applicative phrase, the applicative head is a predicate that takes the Theme DP and the Goal DP as its arguments and establishes the "to-the-possession" relation between them (Pylkkänen 2008). Hence, low applicativization is not possible in the absence of another internal argument, as opposed to high applicativization, which works well with unergative verbs. This is illustrated below for low applicatives in English, (27a), and high applicatives in Luganda, (27b).

(27) a. *John walked him.

b. Mukasa ya-tambu-le-dde Katonga.
Mukasa 3SG.PST-walk-APPL.PST Katonga
'Mukasa walked for Katonga.' (Pylkkänen 2008: 20)

Under the assumption that *pomoč'* and *pomešat'* are ditransitive verbs that embed a low ApplP with the Goal merged in its specifier position, the question arises as to what occupies the lower complement position. One might suggest that the embedded clause is combined directly with the applicative head, as in (28).

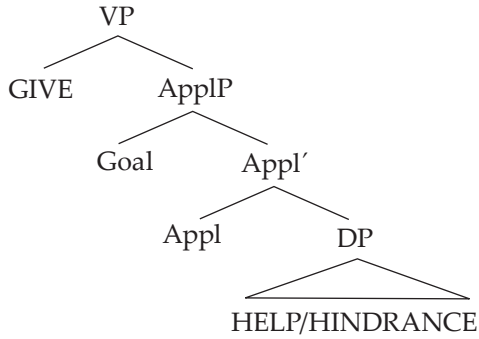
(28) [$_{VP}$ V [$_{ApplP}$ Goal [$_{Appl'}$ Appl [$_{CP/FinP}$ …]]]]

However, such an analysis would run into the following problems. As shown in §2, the infinitival clause with a controlled PRO subject is a property. In principle, it can be predicated of the Goal, but it cannot be used as an argument of the applicative head. As for the embedded infinitival clause with an overt subject, although as a fully saturated CP it would be fitting as an argument, placing it in the complement position of the Appl head would require an explanation for its incompatibility with a [+sentient] Goal (§2). In addition to this, recall that embedded infinitival clauses in sentences with *pomoč'* or *pomešat'* are optional and can easily be omitted, (16). This is unexpected for clausal arguments with a specific thematic role; cf. sentences with a matrix mandative/implicative verb, where the clausal dependent is obligatory, (16a).

With these considerations in mind, I propose instead that the complement position of the applicative head is occupied by a nominal phrase headed by the silent abstract noun HELP/HINDRANCE. Thus, *pomoč'* 'help' is decom-

posed into 'GIVE someone HELP' and *pomešat'* 'hinder' is decomposed into 'GIVE someone HINDRANCE', as schematized in (29).[17]

(29)



The obligatory phonological silence of the H-head, as evidenced by the ungrammaticality of (30a), is expected under the assumption that the head is combined with the matrix V via head movement/incorporation and that the lexical items *pomoč'* and *pomešat'* are inserted post-syntactically instead of the [GIVE + H] combination. The structure outlined in (29) brings together *pomoč'*/*pomešat'* sentences and the synonymous expressions with a verb of transfer and the overt nouns *pomošč'* 'help' and *pomexa/prepjatstvie* 'hindrance', exemplified in (30b–c).

(30) a. Maša pomogla mne (*pomošč').
Masha helped I_{DAT} $help_{ACC}$
'Masha helped me.'

b. Maša okazala mne *(pomošč').
Masha provided I_{DAT} $help_{ACC}$
'Masha provided me help.'

c. Voditel' inomarki okazal pomexu dviženiju.
driver $foreign.car_{GEN}$ gave $hindrance_{ACC}$ $traffic_{DAT}$
'The driver of the foreign car hindered the traffic.'

The ditransitive analysis put forward in this paper can further be extended to other ditransitive constructions with a meaning similar to 'help', such as *dat' šans/vozmožnost'* 'give a chance/opportunity' in (31), which, to the best of my knowledge, have so far been overlooked in the literature on control.

[17] While I believe that they share the general properties, I do not claim that the "hidden" lexical items in (29) are identical to the verb *dat'* 'give' and the nouns *pomošč'* 'help' and *pomexa* 'hindrance'.

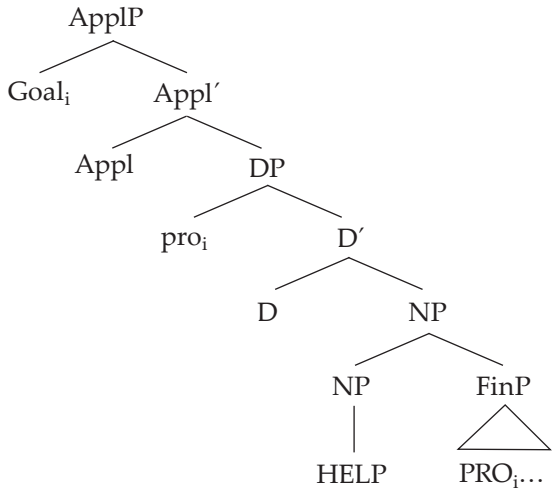
(31) a. Maša dala mne šans /vozmožnost' (sdat' ékzamen).
Masha gave I_{DAT} $chance_{ACC}$ $opportunity_{ACC}$ $pass_{INF}$ exam
'Masha gave me a chance/opportunity to pass the exam.

b. [$_{VP}$ *dat'* [$_{ApplP}$ Goal [$_{Appl'}$ Appl [$_{DP}$ *šans*]]]]
DAT

3.4. Infinitival Clause: A Matrix Argument or an Embedded Modifier

In the previous section, I have noted that the embedded infinitival clause with a controlled PRO subject cannot be used as an argument. Instead, I propose that it is a modifier within the NP headed by the H-noun, (32). The infinitival clause with a DP subject, on the contrary, should be analyzed as an argument of the applicative head, the $Goal_{Situation}$ (§4.2).

(32)



From a cross-linguistic perspective, the idea that a dependent clause is embedded within a nominal phrase headed by a silent element is not novel. On the one hand, there are multiple approaches that postulate the presence of a DP layer on top of the embedded CP in the subject/object position, (33a); see Roussou 1991, Farudi 2007, Hartman 2012, Kastner 2015, and Knyazev 2016. On the other hand, more complex analyses whereby the clause is embedded within a DP with a silent lexical N head, (33b), have been proposed by Lees (1965), Aygen (2002), and Maki and Uchibori (2008), to name a few. It has also been argued that at least some clauses embedded in NPs are modifiers and not complements, (33c); see Stowell 1981 and more recent discussions in Kratzer 2006 and Moulton 2009.

(33) a. $[_{DP}\ D_{Ø}\ [_{CP}\ \ldots\ ]]$

b. $[_{DP}\ D\ [_{NP}\ N_{Ø}\ [_{CP}\ \ldots\ ]]]$

c. $[_{DP}\ D\ [_{NP}\ [_{CP}\ \ldots]\ [_{NP}\ N_{Ø}]]]$

I provide additional support for the analysis in (32) in §4. Section 4.1 compares the controlled infinitival clauses to *in*-PPs that co-occur with *pomoč'* and *pomešat'* and discusses predicative control into adjuncts, while section 4.2 focuses on eventive Goals: deverbal event nominals, infinitival clauses with overt DP subjects, and most importantly, *čtoby*-clauses.

4. *Pomoč'* and *pomešat'* and Other Dependents

4.1. Modifiers of the H-Noun

4.1.1. Clausal and PP Adjuncts

In §3 I argued that sentences with *pomoč'* and *pomešat'* involve an abstract GIVE predicate plus a direct object (the H-NP) and an indirect object (the Goal). I further proposed that the controlled infinitival clause is merged as a modifier within the H-NP.[18]

This analysis straightforwardly accounts for the optionality of the non-finite clause, (34a). Importantly, note that the clausal adjunct can be substituted by a PP headed by the preposition *v* 'in' and including an eventive nominal (*in*-PP), as illustrated in (34b) on the following page; the two dependents can also be coordinated, (34c).

[18] One might argue that the embedded clause in such cases should be opaque for subextraction, due to the Complex NP Constraint (Ross 1967); as shown in (i), A-bar movement is allowed at least by some speakers.

(i) %[K čemu]$_i$ vy pomogli rebenku vse vmeste [adaptirovat'sja t_i]?
to what you$_{PL}$ helped child$_{DAT}$ all together adapt$_{INF}$
'What did you all together help the child to adapt to?'

At this point, I do not have an explanation for this fact. However, it is important to mention that clauses embedded in a nominal phrase can occasionally remain transparent (den Dikken 2017). In (iib) specifically, *make the claim* is a collocation semantically equivalent to *claim*, similarly to how in (i) the underlying GIVE + HELP morphs into 'help'.

(ii) a. this is a paper that we need to find someone who understands

b. ?Who did you make the claim that Bill had talked to?

(34) a. Rosturizm pomog agentstvam (prodavat' tury v Egipet).
Rostourism helped agencies$_{DAT}$ sell$_{INF}$ tours into Egypt
'Rostourism helped the agencies to sell tours to Egypt.'

b. Rosturizm pomog agentstvam v prodaže turov
Rostourism helped agencies$_{DAT}$ in sale$_{PREP}$ tours$_{GEN}$
v Egipet.
into Egypt
'Rostourism helped the agencies to sell tours to Egypt.'

c. %Maša pomogla Pete pozdravit' Svetu
Masha helped Petja$_{DAT}$ congratulate$_{INF}$ Sveta$_{ACC}$
*(i) v poiske podarka.
and in search$_{PREP}$ present
'Masha helped Petja to congratulate Sveta and to search for a present.'

PPs are notorious for denoting properties and being modifiers/predicates (den Dikken 1995). Other examples of infinitival clause/PP alternation are found in Russian; consider, for instance, purpose adjuncts in (35).

(35) a. Ja vzjal sto rublej čtoby kupit' knigu.
I took hundred rubles so.that buy$_{INF}$ book$_{ACC}$
'I took one hundred rubles to buy a book.'

b. Ja vzjal sto rublej dlja pokupki knigi.
I took hundred rubles for buying$_{GEN}$ book$_{GEN}$
'I took one hundred rubles to buy a book.'

The *in*-PPs in examples such as (34b) differ from ordinary PP adjuncts of the main verb. First, PP modifiers of lexical verbs typically can be stranded when the verbal phrase is dislocated.[19]

(36) [Pomogat' studentam]$_i$ Marina budet t_i [na ékzamene] SAMA.
help$_{INF}$ students$_{DAT}$ Marina will on exam herself
'Marina will HERSELF help the students at the exam.'

In contrast, the *in*-PPs under consideration must move together with the VP, (37). As shown in (38), the same restriction applies to direct objects and PP

[19] In Russian a constituent at the right edge of a clause can often be interpreted as a focus, which obstructs the comparison. Because of this, I added an independent right focus constituent to the examples in (37) and (38).

modifiers of direct objects in ditransitive constructions. The parallelism is expected under the assumption that the *in*-PP in (37) is embedded into a Theme H-NP but is difficult to explain otherwise.

(37) *[Pomogat' studentam] Marina budet [v poiske podarka]
help$_{INF}$ Petja$_{DAT}$ Marina will in search$_{PREP}$ present$_{GEN}$
SAMA.
herself

(38) a. *[Otpravljat' studentam t_i] Marina budet [granty na
send$_{INF}$ students$_{DAT}$ Marina will grants$_{ACC}$ on
issledovanija]$_i$ SAMA.
research herself

b. *[Davat' studentam [knižki t_i]] Marina budet
give$_{INF}$ students$_{DAT}$ books$_{ACC}$ Marina will
[o prirode]$_i$ SAMA.
about nature herself

Second, unlike ordinary verbal modifiers, for instance, a *for*-PP in (39a) or a locative PP in (39b), the *in*-PPs under consideration can contain a reciprocal pronoun bound by the Goal, as in (39c), which indicates that they are c-commanded by the latter.[20]

(39) a. *Marina pomogla/pomešala mal'čikam$_i$ [**radi** drug druga$_i$].
Marina helped hindered boys$_{DAT}$ for each other

b. ??Marina pomogla/pomešala mal'čikam$_i$ [**na** vystuplenijax
Marina helped hindered boys$_{DAT}$ at performances
drug druga$_i$].
each other
Intended: 'Marina helped/hindered the boys at each other's performances.'

c. Marina pomogla/pomešala mal'čikam$_i$ [**v** poiske
Marina helped hindered boys$_{DAT}$ in search$_{PREP}$
drug druga$_i$].
each other
'Marina helped/prevented the boys to search for each other.'

[20] A reviewer suggested that (39b) sounded better than (39c). I elicited this example with nine native speakers of Russian: three marked it as marginal and six as unacceptable.

These two properties indicate that the *in*-PPs are merged lower in the structure than ordinary prepositional adjuncts, which is captured by the proposed analysis. The binding facts in (39) are unsurprising if the Goal c-commands the whole H-NP, and stranding the PP is not allowed in (37) because it would require breaking the applicative phrase into two parts.

A remaining concern is how obligatory control is established between the Goal in Spec, ApplP and the PRO subject in the embedded adjunct clause. Most work on control focuses on clausal arguments of verbal predicates, and the analysis proposed in this paper faces the following two challenges. First, the controlled clause is an adjunct. Second, the controlled clause is embedded in an NP, while the controller is seemingly located higher in the sentence; yet predication relation must be established between the two. The next section addresses these issues. I begin by showing that the first concern is unsubstantial and proceed by proposing a solution for the second problem.

4.1.2. Control into Adjuncts

That non-finite adjunct clauses allow obligatory control was already shown by Clark (1990) and E. Williams (1992), and has most recently been discussed by Landau (2017), who divides non-finite clausal adjuncts into predicative and logophoric, in parallel to clausal complements. Examples of predicative adjuncts in English are given in (40).

(40) a. John$_i$ excelled [in order PRO$_i$ to find a new job].
– obligatory control

b. *John$_i$ excelled [in order PRO$_{arb}$ to admire him$_i$].
– non-obligatory control prohibited (Landau 2017: 6)

The obligatory control adjuncts in (40/41a) have the structure identical to that of predicative complements, (41b), and get predicated of a matrix argument in the same manner as depictive secondary predicates.

(41) a. [$_{PP}$ *before/in order* [$_{FinP}$ PRO$_i$ Fin [$_{TP}$ t$_i$ …]]]

b. [$_{VP}$ *force/compel* [$_{SC}$ DP$_i$ [$_{Rel'}$ Rel [$_{FinP}$ PRO$_i$ Fin [$_{TP}$ t$_i$ …]]]]]

However, in the case of the sentences with *pomoč'* or *pomešat'* analyzed as proposed in (32), it is questionable whether a modifier embedded in the H-NP can serve as a secondary predicate to the matrix Goal, since predication is an inherently local relation (Rothstein 1991). As a solution for this problem, I propose that the H-NP contains an implicit possessor (*pro*), obligatorily coreferent with the Goal. Predication is established locally between the *pro* and the

modifier FinP; the same mechanism is at work, for example, in 'give a chance' sentences, as in (42) below.

(42) a. $[_{\text{ApplP}}\ \text{Goal}_i\ [_{\text{Appl'}}\ \text{Appl}\ [_{\text{DP}}\ \underbrace{\text{pro}_i\ [_{\text{D'}}\ \text{D}\ [_{\text{NP}}\ [_{\text{NP}}\ \text{HELP/HINDRANCE}]\ [_{\text{FinP}}\ \text{PRO}_i\ \ldots]]]]]]}_{\text{predication}}$

b. Maša dala mne šans sdat' ékzamen.
Masha gave I_{DAT} chance pass_{INF} exam
'Masha gave me a chance to pass the exam.'

Support for the syntactic presence of implicit possessors in DPs come from the fact that they are generally visible for binding (E. Williams 1985, 1987; Chomsky 1986) and control (Roeper 1987).

(43) a. They_i told [pro_i stories about each other_i].
b. *They_i told [my stories about each other_i].
c. the pro_i destruction of the boat [PRO_i to collect the insurance]
d. *the boat's destruction [PRO to collect the insurance]

Sichel (2010) provides support for silent possessors being *pro*'s.[21] Among other arguments, she points out that implicit possessors allow non-c-commanding antecedents, in the same way as overt pronouns.

(44) [John's$_i$ mother]$_j$ was committed to [the $pro_{i/j}$ refusal [$\text{PRO}_{i/j}$ to jeopardize himself/herself]].

Implicit possessors in Russian exhibit similar behavior; see Burukina 2014 for a detailed discussion. They are often flexible when choosing the antecedent, which becomes noticeable when control is involved, as in (45), similarly to (44).

[21] As was pointed out by a reviewer, analyzing implicit possessors as *pro*'s gives rise to an important question regarding the inventory and distribution of silent pronouns in a given language. In Russian, implicit possessors can have a first-, second-, or third-person antecedent: *Ja/ty/ona*$_i$ *pozvonila* [pro_i *mame*] 'I/you/she called my/your/her mom'. In contrast, *pro*-drop in a clause is restricted; for instance, Tsedryk (2015) argues that only third-person *pro* subjects are allowed, while occasional examples of a silent first- or second-person subject shall be treated as topic-drop/ellipsis. The same problem appears in English (Sichel 2010), a famously non-*pro*-drop language. I do not have an immediate solution for it, but I believe that an answer can be found in closer examination of the differences between verbal and nominal domains.

(45) a. Ja$_i$ obradovalsja [*pro*$_i$ šansu [PRO$_i$ kupit' sebe$_i$/
I rejoiced chance$_{DAT}$ buy self
*drug drugu konfet]].
each other candies
'I rejoiced at the chance to buy myself candies.'

b. Ja$_k$ obradovalsja [našemu$_i$ šansu [PRO$_{i/*k}$ kupit'
I rejoiced our chance$_{DAT}$ buy
sebe$_{i/*k}$/drug drugu$_i$ konfet]].
self each other candies
'I rejoiced at our chance to buy ourselves/each other candies.'

c. [Petina$_i$ mama]$_k$ obradovalas' [*pro*$_{i/k}$/jego$_i$ šansu
Petja$_{POSS}$ mother rejoiced his chance$_{DAT}$
[PRO$_{i/k}$ sdat' ékzamen]].
pass$_{INF}$ exam
'Petja's mother rejoiced at her/his chance to pass the exam.'

On the one hand, as shown in (45), both overt and covert possessors in Russian can establish control into a non-finite adjunct clause; a similar observation has been made by Douglas (2019) based on the behavior of infinitival relatives in English, as in *This is John's book to read*. On the other hand, *pro* is visible as a subject of predication, as evidenced in examples with a depictive secondary predicate:

(46) a. Ja skazal, čto *pro*$_i$ pojdu tuda pjanym$_i$.
I said that go there drunk$_{INST}$
'I said that I would go there drunk.'

b. U menja est' [*pro*$_i$ fotografii pjanym$_i$].
at me exist photos drunk$_{INST}$
'I have my photos where I am drunk.'

Thus, implicit *pro* possessors can saturate a local syntactic predicate. In *pomoč'/pomešat'* sentences and 'give a chance' constructions, the *pro* serves as the subject for the adjunct FinP and determines the value of the embedded PRO variable, (42a).

As mentioned above, implicit possessors usually do not impose severe restrictions on a potential antecedent. However, recall that in *pomoč'/pomešat'* sentences no partial or split control between the Goal and the embedded PRO is allowed; see (23) on p. 170. I propose that those are ruled out because the applicative head establishes the "to-the-possession" relation between the ap-

plied object and the lower argument;[22] by extension, the embedded implicit possessor (*pro*), when present, must have the exact same reference as the DP in Spec, ApplP (the Goal). That the coreference between the embedded possessor and the matrix Goal in this particular configuration is obligatory is also evident in 'give a chance'-type examples, where the possessor can be overt, as in (47).

(47) Ja dala tebe$_i$ *pro*$_{i/*k}$/tvoj/*moj/*ego šans sdat' ékzamen.
I gave you$_{DAT}$ your my his chance pass$_{INF}$ exam
Only: 'I gave you your chance to pass the exam.'

One piece of data remains to be discussed. This section has focused on sentences with *pomoč'* or *pomešat'* and an embedded property-type non-finite clause with a controlled subject. In §2 I demonstrated that *pomoč'* and *pomešat'* can also appear together with a fully saturated non-finite clause with an overt referential subject and that this dependent is incompatible with a [+sentient] dative Goal. To account for this, I propose that the clausal argument and the animate DP compete for the Goal position; additional support comes from the distribution of other argument dependents: eventive DPs and subjunctive clauses.

4.2. Eventive Goals: *Čtoby*-Clauses

In sentences with *pomoč'* or *pomešat'*, the Goal merged as an applied object denotes either a person or a situation toward which the Agent directs their efforts. The Goal$_{Situation}$ can be expressed by an eventive nominal or a fully saturated CP, subjunctive or infinitival. Under such an analysis, we expect the Goal$_{Person}$ and the Goal$_{Situation}$ to be mutually exclusive, which is true for Russian, as I demonstrate below.

Pomoč' and *pomešat'* can be combined with an eventive dative DP that refers to the situation that the Agent wants to happen (*pomoč'* 'help') or to not happen (*pomešat'* 'hinder').[23] As shown in (48) on the following page, such a DP cannot co-occur with a Goal$_{Person}$.

[22] Under the low-applicative approach, the obligatory nature of the binding is ensured by the semantics of the Appl head. Alternatively, a similar possession relation will still be entailed, potentially encoded in the main predicate GIVE or a combination of the main verb and a high Appl head (see fn. 14).

[23] Data from the Russian National Corpus demonstrate that nominal Goals$_{Situation}$ are less frequent than Goals$_{Person}$. Searching for a sequence of *pomoč'* or *pomešat'* and an inanimate dative DP returns only 12 examples with an eventive nominal and about 75 examples with a sentient Goal ('company', 'organization', etc.) among the first 100 results.

(48) Rosturizm pomog prodaže turov v Egipet.
Rostourism helped sale$_{DAT}$ tours$_{GEN}$ into Egypt
'Rostourism helped to sell tours to Egypt.'

Recall from §2 that the Goal$_{\text{Person}}$ or Goal$_{\text{Situation}}$ is also incompatible with a fully saturated non-finite clause with an overt subject, as in (17), reproduced in (49) below.

(49) a. Vrač pomog (*Pete) [rane zažit'].
doctor helped Petja$_{DAT}$ wound$_{DAT}$ heal$_{INF}$
'The doctor helped for the wound to heal.'

b. Zima pomešala (*stroitel'stvu) [zdaniju byt'
winter hindered construction$_{DAT}$ building$_{DAT}$ be$_{INF}$
dostroennym].
complete$_{PTCP}$
'Winter prevented the building from being constructed.'

The restriction holds for embedded subjunctive clauses as well. The embedded clause should be analyzed as an argument in the absence of a [+sentient] Goal, (50a). Whenever the Goal DP is present, the subjunctive clause must be interpreted as a purpose adjunct, (50b–c).

(50) a. Maša pomogla, [čtoby Anna sdala ékzamen].
Masha helped so.that Anna pass$_{SUBJ}$ exam
'Masha helped Anna to pass the exam.'

b. Maša pomogla **Pete**, [čtoby on sdal ékzamen].
Masha helped Petja$_{DAT}$ so.that he pass$_{SUBJ}$ exam
'Masha helped Petja, so that he would pass the exam.'

c. Maša pomogla **Svete** den'gami, [čtoby Petja sdal
Masha helped Sveta$_{DAT}$ money$_{INST}$ so.that Petja pass$_{SUBJ}$
ékzamen].
exam
'Masha helped Sveta with money, so that Petja would pass the exam.'

Although in affirmative sentences the interpretational difference between an argument subjunctive clause and a purpose clause is often subtle, it becomes more evident when the matrix predicate is negated. In general, clausal argu-

ments fall under the scope of the sentential negation, while clausal purpose adjuncts do not, e.g., (51a) vs. (51b).

(51) a. Clausal arguments

Petja ne xotel, [čtoby Maša obidelas']. NEG > čtoby
Petja NEG wanted so.that Masha get.hurt$_{SUBJ}$

'Petja did not want for Masha to get hurt.'

b. Clausal adjuncts

Petja ne zvonil, [čtoby Maša obidelas']. čtoby > NEG
Petja NEG called so.that Masha get.hurt$_{SUBJ}$

'Petja did not call so that Masha would get hurt.' (Petja wanted her to get hurt.)

Compare now (52a) and (52b) below, both involving the verb *pomoč'* and a subjunctive clause. On the one hand, in (52a), where there is no dative DP in the main clause, the *čtoby*-clause is interpreted as an argument, and we infer from the sentence that Marina did not help Anna to pass the exam, because she was not interested in Anna's success. The purpose reading—Marina wanted Anna to succeed at the exam and that is why she deliberately refrained from doing something unmentioned—is not available. On the other hand, the embedded clause in (52b), used together with a dative Goal, allows only a purpose reading. Similar examples where the subjunctive clause would be interpreted as a Goal$_{Situation}$ are not found in corpora (including the Russian National Corpus) or online by Google search.

(52) a. Marina ne pomogla, [čtoby Anna sdala NEG > čtoby
Marina NEG helped so.that Anna pass$_{SUBJ}$
ékzamen].
exam

'Marina did not help Anna to pass the exam.' (Marina was not interested in Anna passing the exam.)
Not available: 'Marina did not help with something, so that Anna would pass the exam.'

b. ?Marina ne pomogla Anne$_i$, [čtoby ona$_i$ čtoby > NEG
Marina NEG helped Anna$_{DAT}$ so.that she
sdala ékzamen].
pass$_{SUBJ}$ exam

'Marina did not help Anna, so that she could pass the exam.'
Not available: 'Marina did not help Anna to pass the exam.'

Adjunct clauses are islands opaque for A-bar movement (as per Huang's 1982 Condition on Extraction Domain), and argument clauses are usually transparent for subextraction. Considering this restriction, a subjunctive clause embedded under *pomoč'* 'help', in the absence of a dative DP, patterns with complement clauses, such as the *čtoby*-dependents of *xotet'* 'want'—(53a) and (54a)—while a subjunctive clause used together with a dative DP behaves as an adjunct—(53b) and (54b–c).

(53) a. Clausal arguments

Kuda$_i$ Maša xotela, [čtoby Petja postupil t_i]?
where Masha wanted so.that Petja enter$_{SUBJ}$

'Where did Masha want for Petja to get accepted?'

b. Clausal adjuncts

*Kuda$_i$ Maša zaplatila, čtoby Petja postupil t_i?
where Masha paid so.that Petja enter$_{SUBJ}$

(54) a. Kuda$_i$ Maša pomogla, [čtoby Petja postupil t_i]?
where Masha helped so.that Petja enter$_{SUBJ}$

'Where did Masha help Petja to get accepted?'

b. ?*Kuda$_i$ Maša pomogla Pete, [čtoby on postupil t_i]?
where Masha helped Petja$_{DAT}$ so.that he enter$_{SUBJ}$

c. *Kuda$_i$ Maša pomogla Svete den'gami, [čtoby Petja postupil t_i].
where Masha helped Sveta$_{DAT}$ money$_{INST}$ so.that Petja enter$_{SUBJ}$

Additionally, clausal arguments resist being fronted and normally follow the predicate, as shown in (55). An adjunct purpose clause, on the contrary, can be linearized at the right or left edge of the sentence, as in (56) below.

(55) Clausal arguments

?*[Čtoby Petja postupil v vuz], Maša xotela.
so.that Petja enter$_{SUBJ}$ into university Masha wanted

(56) Clausal adjuncts

a. Maša zaplatila, [čtoby Petja postupil v vuz].
Masha paid so.that Petja enter$_{SUBJ}$ into university

'Masha paid so that Petja would get accepted into a university.'

(56) b. [Čtoby Petja postupil v vuz], Maša zaplatila.
so.that Petja enter$_{SUBJ}$ into university Masha paid
'Masha paid so that Petja would get accepted into a university.'

As shown in (57), there is a strong contrast between *pomoč'/pomešat'* sentences with and without a dative DP: the subjunctive clause can appear at the left edge in the former, (57a), but not in the latter, (57b).

(57) a. [Čtoby Petja$_i$ postupil v vuz], Maša pomogla **emu**$_i$.
so.that Petja enter$_{SUBJ}$ into university Masha helped he$_{DAT}$
'Masha helped Petja so that he would get accepted into a university.'

b. *[Čtoby Petja postupil v vuz], Maša pomogla.
so.that Petja enter$_{SUBJ}$ into university Masha helped

The data discussed above show that the dative Goal DP and the subjunctive argument clause cannot co-occur in a sentence with *pomoč'* or *pomešat'*. Such complementarity is unusual among the Russian verbs with two arguments, one of which is nominal and the other is clausal, as in (58) below.

(58) a. Maša ne zastavljala Marinu, *(čtoby ona ušla).
Masha NEG forced Marina$_{ACC}$ so.that she leave$_{SUBJ}$
'Masha did not force Marina to leave.'

b. Maša ne velela Marine, *(čtoby ona uxodila).
Masha NEG ordered Marina$_{DAT}$ so.that she leave$_{SUBJ}$
'Masha did not order Marina to leave.'

The restriction is straightforwardly accounted for under the assumption that, in *pomoč'/pomešat'* constructions, the dative DP and the embedded subjunctive clause compete for the same argument position. The [+sentient]/eventive alternation should not surprise us; a well-known example is the Agent/Cause alternation common for many transitive verbs, illustrated in (59).

(59) a. John/Listening to so many podcasts will kill/upset her.

b. Ja obradovalsja Maše / poezdke / [čto Petja prišel].
I rejoiced Masha$_{DAT}$ trip$_{DAT}$ that Petja came
'Masha/The trip/That Petja had come made me happy.'

That a clausal argument can occupy the specifier position is also attested across the world's languages. Alternatively, it can be proposed that a silent

proleptic pronoun is merged instead of an applied object, while the clause linked to it is in a peripheral position. Russian examples that can potentially be analyzed as involving clausal prolepsis with a null proform are given in (60); note, however, there is no general consensus in the literature regarding the exact structure of such sentences. At this point, I remain agnostic about which of the two analyses—direct merge or prolepsis—is the correct one and leave this issue open for future research.

(60) a. Čtoby ty prišel bylo predloženo ešče včera.
so.that you come$_{SUBJ}$ was offered already yesterday
'Already yesterday it was offered that you should come.'

b. Ešče včera bylo predloženo čtoby ty prišel.
already yesterday was offered so.that you come$_{SUBJ}$
'Already yesterday it was offered that you should come.'

5. Concluding Remarks

This paper considered sentences with the verbs *pomoč'* 'help' and *pomešat'* 'hinder' in Russian. I presented novel data to demonstrate that, although these predicates frequently embed a non-finite clause with a PRO subject and are usually listed among object control verbs, they appear in various syntactic contexts and can also combine with saturated non-finite clauses, subjunctive clauses, prepositional phrases, and eventive DPs. The possible dependents fall into two categories: arguments (DPs and saturated clauses) and properties (PPs and controlled clauses). The arguments are mutually exclusive; for instance, a dative DP and a subjunctive clause interpreted as a Goal cannot co-occur. The properties are optional and are often omitted, which is also unusual for control predicates.

To account for this peculiar behavior, I argued that *pomoč'* and *pomešat'* are, in essence, ditransitive, similarly to 'give' or 'send'; they require a Goal (a person or a situation that will be helped/hindered) and a Theme headed by a silent noun HELP/HINDRANCE. A saturated clausal dependent (that is, a *čtoby*-clause or an infinitival clause with an overt subject), when present, should be analyzed as a Goal. A property-type dependent, such as a controlled infinitive or an *in*-PP, is merged as a modifier within the Theme NP.

The proposed decomposition approach is beneficial from an empirical point of view as it straightforwardly accounts for all the peculiar properties of *pomoč'* and *pomešat'* that would pose a problem for an alternative account, for instance, the one whereby these verbs directly select one internal argument, a Goal. First, these verbs appear with a wide range of dependents, each of which is optional. Furthermore, the distribution of some of these dependents—con-

trolled infinitival clauses and *in*-PPs—turns out to be more restricted than that of usual complements/adjuncts of a main verb. The decomposition analysis allows us to model the dependents as either arguments (in complementary distribution with each other) or as modifiers embedded into an argument, thus better capturing their behavior.

Second, when *pomoč'* or *pomešat'* appears with a DP argument, the latter is marked dative; this is unusual for dyadic verbs, which usually take an accusative direct object. However, the decomposition approach resolves the issue. *Pomoč'* and *pomešat'* are not transitive but ditransitive verbs of the *give*-type; the direct object is headed by a null N, and the Goal of helping/preventing, similarly to all other Goals, is an indirect object, hence dative. This matches the semantics of these predicates: 'to help/hinder someone' is literally 'to give them help/hindrance'. Although in this paper I discussed only the translation equivalents of 'help' and 'prevent' in Russian, I believe that the proposed analysis can be adopted to other languages with little modification (for instance, a given language may prohibit prolepsis with subjunctive clauses or not have means to license overt subjects of infinitives, and thus clausal Goals will be restricted). Consider examples in (61) showing that 'help' and 'prevent' in various Slavic languages have very similar distribution.

(61) a. Piotr pomógł Iwan**owi** [zdobyć nagrodę]/ (Polish)
Piotr helped Iwan$_{DAT}$ get$_{INF}$ prize
[w zdobyciu nagrody].
in getting prize
'Piotr helped Iwan to get the prize/in getting the prize.'

b. Petr pomohl Ivan**ovi** [získat cenu]. (Czech)
Petr helped Ivan$_{DAT}$ get$_{INF}$ prize
'Petr helped Ivan to get the prize.'

c. Maria pomogna **na** Petăr [da spečeli (Bulgarian)
Maria helped **to** Petar CMPL win$_{PRS.3SG}$
nagradata] / [za spečelvaneto na nagradata].
prize$_{DEF}$ for winning$_{DEF}$ of prize$_{DEF}$
'Maria helped Petar to win the prize/in winning the prize.'

The decomposition analysis has another advantage, from a theoretical point of view, as it brings together various clause-embedding constructions and allows us to draw a parallel between sentences with *pomoč'/pomešat'* and other verbs with a dative dependent. Consider, for instance, structures for 'help'/'prevent' (62a), mandatives (62b) (as per Burukina 2019, 2020), and verbs of communication (62c). All these verbs share a ditransitive structure with a low applicative phrase, which explains, among other things, the presence of

dative case. The differences between the constructions follow from the nature of the Theme argument.

(62) a. [$_{VP}$ GIVE [$_{ApplP}$ Goal [$_{Appl'}$ Appl [$_{DP}$ HELP/HINDRANCE]]]]
b. [$_{VP}$ SAY [$_{ApplP}$ Goal [$_{Appl'}$ Appl [$_{ModP}$ deontic modal …]]]]
c. [$_{VP}$ *say* [$_{ApplP}$ Goal [$_{Appl'}$ Appl [$_{CP}$ *that* …]]]]

Another direction for future research is to examine the "outliers" in the class of dative control predicates, such as *obeščat'* 'promise', *kljast'sja* 'swear', *ugrožat'* 'threaten', etc., and their translation equivalents in other languages. The decomposition approach presented in this paper—i.e., analyzing these constructions as [GIVE someone PROMISE/THREAT]—may help to capture the similarities between them, including the dative case on a Goal, and account for their unique properties. For instance, these verbs are subject control predicates. Under the proposed analysis, this could be accounted for by restricting the reference of *pro* within the Theme argument, if PROMISE/THREAT are analyzed as effected objects created by the Agent. I leave this option to be considered in the future.

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Derivational Affixes as Roots Across Categories

Marko Simonović

Abstract: Several recent accounts (Lowenstamm 2014; Nevins 2015; Creemers, Don, and Fenger 2017) couched in the framework of Distributed Morphology (Halle and Marantz 1993, 1994) argue for extending the separation between roots and categorial heads to derivational affixes. Such approaches offer a straightforward account of affixes that surface under different categorial embeddings (e.g., *-ant*, both in the noun *defendant* and in the adjective *defiant*) by viewing these affixes as roots. In this article, the affixes-as-roots approach is applied to Slovenian affixes. An account is proposed of the variable prosodic behavior of Slovenian derivational affixes, which behave as either stress-attracting or stress-neutral. It is shown that Slovenian derivational affixes have no lexical stress and all their prosodic effects follow from the structures in which they occur. Specifically, stress-attracting behavior is a result of the fact that sequences of roots with no intermediate functional structure (the so-called radical cores) are spelled out to phonology without any prosodic specification. Phonology then assigns the default final prosody to such sequences, creating the illusion of accented derivational affixes. The proposed account is applied to two affixes, *-av* and *-ov*, which occur across categorial embeddings (nominal, verbal, adjectival).

Keywords: roots, affixes, categories, Distributed Morphology, Slovenian, phasal spellout, Optimality Theory

1. Introduction[1]

The distinction between roots and categorial heads is one of the key properties of most syntax-centric approaches to morphology, the most prominent among which is Distributed Morphology (Halle and Marantz 1993, 1994). In Distributed Morphology (DM), roots are uncategorized and contain references to phonological material and semantic content, but no further internal structure. Categorial heads, on the other hand, display more variation in terms of

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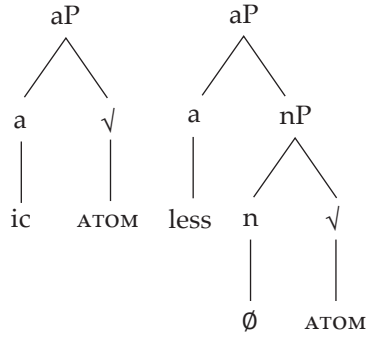
their content, at least in the classical version of Distributed Morphology. For instance, the adjective *cheap* would be analyzed as having a silent adjectivizer, whereas the adjectives *Christmass-y* and *price-less* would be analyzed as having overt adjectivizers. On the side of meaning, while the adjectivizer in *price-less* has a clear semantic contribution, those in *cheap* and *Christmass-y* can be seen as pure adjectivizers. In sum, in classical DM, both semantic and phonological contents are "distributed" in such a way that they are typically obligatory properties associated with roots, but may or may not appear on categorial heads. Therefore, in classical DM, categorial heads are a heterogeneous class of linguistic objects in terms of information that they carry.

While being quite heterogeneous in terms of phonological and semantic content, categorizers in classical DM are allowed quite little structural variation. The only available structural distinction between heads of the same category is that between root-selecting and category-selecting categorial heads. This distinction has been amply used to account for differences in semantic and phonological behavior of affixes. Assuming that categorial heads define spell-out domains, within which the affix can influence the phonological content and the meaning of the root, root-selecting affixes are expected to show up with more unpredictable meaning and cause more phonological changes on the root, whereas category-selecting affixes are expected to have a predictable meaning and cause fewer phonological modifications (for an overview and a specific proposal, see Marvin 2002: 16–31).

This may seem promising in resolving some of the classical puzzles, e.g., the differences in stress assignment between stress-shifting Class 1 and stress-neutral Class 2 affixes in English. For instance, the difference between the stress-shifting affix in *atom-ic* and the stress-neutral affix in *atom-less* can be accounted for by assuming that *-ic* is root-selecting, whereas *-less* is category-selecting (more precisely, noun-selecting), as illustrated in (1). The difference in stress follows from phasal spell-out, assuming that categorial heads trigger spell-out. In *atomic*, there is only one phase, and both √ATOM and *-ic* are in it. Therefore, both elements belong to the same stress-assignment domain. In *atomless*, on the other hand, the nP, which only contains √ATOM and a mute nominal head, gets spelled out first (the output being *átom*), whereas *-less* gets spelled out in the second phase and therefore fails to influence the stress of the whole.

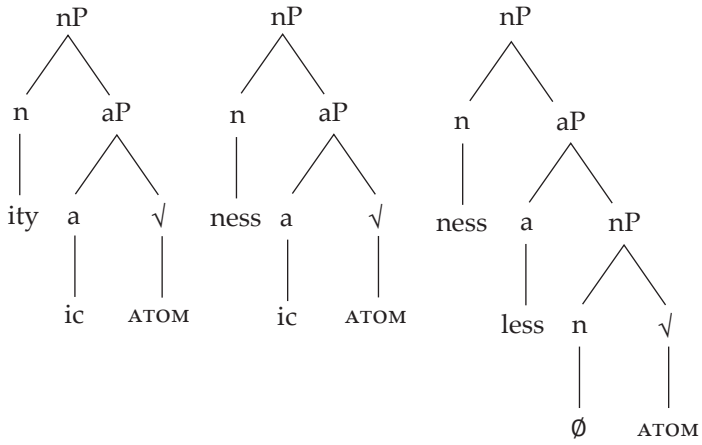
(1) *atomic* and *atomless* in classical DM



It may seem as if the classical system is offering a perfect structural match for the English stress facts, as it allows a two-way contrast, which perfectly matches the distinction between the stress-shifting Class 1 and stress-neutral Class 2 affixes. A further advantage is that this system correctly predicts that category-selecting Class 2 affixes can come after both Class 1 and Class 2 affixes, as testified by the adjective-selecting affix *-ness*, which can be added both to *atomic* and to *atomless*. However, there is a problem: classical DM also predicts all affixes that can attach to other affixes to behave like *-ness*, i.e., to be category-selecting and stress-neutral. This prediction is not borne out. Continuing to build on the structure from the previous examples, we find that *atomless* indeed only allows further nominalization with a Class 2 suffix (in *atomlessness*), but *atomic* allows both a Class 2 suffix, in *atomicness*, and a Class 1 suffix, in *atomicity*. The Class 1 status of *-ity* is attested by its stress-shifting behavior. While both *atomicness* and *atomlessness* are stressed in the same way as their respective related adjectives *atomic* and *atomless*, *atomícity* displays a stress shift with respect to *atómic*.

A stress-shifting category-selecting affix is not representable in the model just sketched. In (2) the "classical" trees for *atomicity*, *atomicness*, and *atomlessness* are shown. The problem is that as long as we maintain that *-ic* is an adjectival head, *-ity* will have exactly the same structural position as *-ness*, i.e., it will be outside the first phase, and for *atomicity*, the wrong output (**atómicity*) will be predicted.

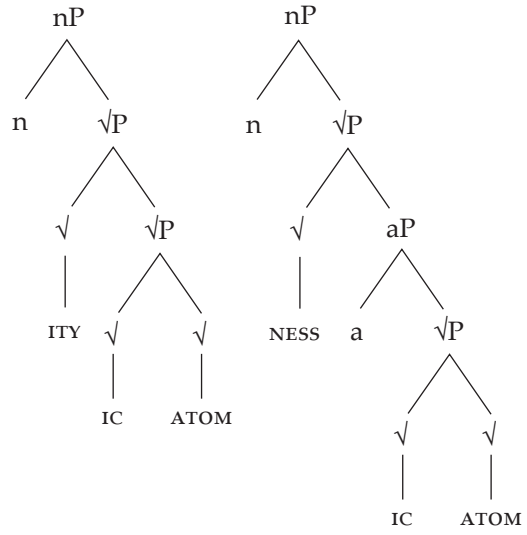
(2) *atomicity*, *atomicness*, and *atomlessness* in the classical DM analysis



As convincingly shown by Lowenstamm (2014), whatever version of phasal spell-out assumed, *atomicity* and *atomicness* will always end up having the same predicted stress pattern, because *-ity* and *-ness* are not root-adjacent. This also goes for approaches which assume diacritics on affixes, as long as they also assume that these diacritics cannot influence the spell-out of the previous phases (e.g., Marvin 2002: 80). This means that the classical DM treatment of affixes in combination with phasal spell-out cannot accommodate the existence of Class 1 and Class 2 affixes beyond the first phase.

The solution proposed by Lowenstamm (2014) amounts to "promoting" derivational affixes to roots. Roots now include items which have phonological and/or semantic content, whereas categorial heads are (typically) mute and without any stored meaning. In this new picture, roots are quite structurally variegated, as some of them can project to the phrasal level without a complement (e.g., √DOG), while others require a complement, which can either be a category (e.g., in the case of √NESS) or a root (e.g., in the case of √ITY). Lowenstamm claims that root-selecting roots will only be encountered in what he terms "the radical core", a set of roots which form a root phrase at the bottom of the structure. Lowenstamm further assumes that phonological rules re-apply with each new root phrase. The same result can be obtained by having the rules apply to the whole radical core at once, on the first round of spell-out. In (3) the Lowenstammian analyses of *atomicity* and *atomicness* are given.

(3) *atomicity* and *atomicness* in the Lowenstammian re-analysis



Now we can finally make a structural distinction between *-ity* and *-ness*. The root-selecting root √ITY is part of a radical core, which can be viewed as a single stress-assignment domain. On the other hand, √NESS is an adjective-selecting root which remains in the highest phase and therefore has no influence on stress. The consequences of the Lowenstammian turn for the architecture of grammar are many, and exploring all of them would go beyond the scope of this paper. In order to set the stage for this article and turn to Slovenian data, in the following subsection, I will focus on two of these consequences: the combinability of derivational affixes with different categories (both as selectors and as selectees of roots) and the information that needs to be stored concerning this combinability.

1.1. *-Ness* and *-ic* as Phrasal Idioms?

If affixes are roots, they are predicted to be able to surface under different categorial embeddings, just like "traditional" roots can (e.g., in the nouns/verbs *work*, *walk*, *need*, etc.). This prediction is addressed by Lowenstamm (2014). He shows that there are many affixes in English which surface under different categorial embeddings. For instance, *-ic* is not only present in adjectives, such as *magic*, *pragmatic*, and *atomic*, but also in nouns, such as *magic*, *pragmatics*, and *logic*. At first blush, a perfect parallelism seems to be preserved between "traditional" roots (e.g., *dog*, *cat*, and *walk*) and affixal roots (e.g., *-ness*, *-ity*, and *-ic*). They do of course differ in their selectional requirements: "traditional" roots do not require any complements in order to project to the phrasal level,

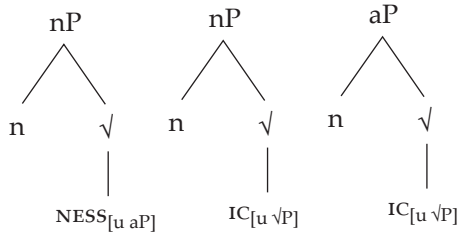
whereas affixal roots require either a category or a root as their complement. On the other hand, it still remains true of all roots that they need to be categorized in order to surface. The issue of what exactly sieves out unattested combinations of roots and categories was addressed by Lowenstamm: it is the Encyclopedia. For instance, Lowenstamm (2014) states that, in principle, well-formed yet unattested combinations, such as the adjective **motric* (cf. *motricity*), are unattested because they are simply not recorded in the Encyclopedia.

This understanding of the Encyclopedia is not new in the DM literature. The same idea, applied to "traditional" roots, has often been exemplified by the noun *cat* and the claim that "*cat* is a phrasal idiom" (Marantz 1996), i.e., that the meaning of the root √CAT, 'furry domestic feline', is stored in the Encyclopedia together with its nominal context. More generally, Marantz (1996: 9) claims that "in semantic interpretation, the Encyclopedia assigns to atoms of syntactic composition noncompositional (atomic) meanings based on the choice of Vocabulary item for that atom and based on the syntactic context". The reason for the non-attestedness of the verb *to cat* in most varieties of English then lies in the fact that there is no Encyclopedia entry for this combination. Marantz (1996: 23) therefore concludes that "the meaning of 'cat' is idiomatic, i.e., Encyclopedic—a function of the choice of a particular Vocabulary item in a particular syntactic environment".

There is, however, an important difference between recording the categorial context of "traditional" roots and doing the same for affixal roots. For instance, recording √CAT as occurring in an nP is a matter of one Encyclopedia entry, whereas analogous recording for √NESS means that the same piece of information (regarding the category selected by the root, the category that selects the root, as well as the semantic contribution of the parts) will be repeated thousands upon thousands of times in the Encyclopedia, as *-ness* combines with virtually all adjectival items, always producing nouns and having a very limited range of semantic contributions. Moreover, even non-attested well-formed items such as **motric* are easily categorized by native speakers of English: in this case, most probably as an adjective, less probably as a noun. In sum, having the categorial adherences of affixal roots recorded in the Encyclopedia by simply stating them for each word in which these affixal roots occur turns out to be an extremely extravagant solution.

In order to keep the advantages of Lowenstamm's proposal, I submit that the categorial adherences are recorded only once, in the same Encyclopedia entry where their selectional requirements are recorded. The Encyclopedia entries for √NESS and √IC would then look like the representations in (4). The selectional requirements are encoded as uninterpretable features. For example, the uninterpretable feature on √NESS is the reason why this root cannot project at the phrasal level without an adjectival complement. Of course, there may be more to the Encyclopedia entries than this basic sketch, e.g., a specific "flavor" of the involved categorial heads. I leave this issue to further research.

(4) Encyclopedia entries for √ness and √ic



This proposed solution begs the question of the unattestedness of independent words *ness* and *ic* for most (but not all) speakers of English. One part of the explanation lies in the lacking complement of the affixal roots, even though idioms can exceptionally contain "ungrammatical" structures (e.g., *as sure as eggs is eggs*, *monkey see monkey do*). Another promising answer lies in the incomplete or completely lacking semantic content associated with the idioms in (4). Note that in classical Distributed Morphology, affixes like *-ness* and *-ic* were unproblematically considered under the rubric of nominalizers and adjectivizers without any additional meaning. The nouns *ness* and *ic* and the adjective *ic* are therefore licit by virtue of being stored in the Encyclopedia but lack any meaning or, alternatively, have a meaning so general that they never get selected for insertion.

Assuming idioms which potentially lack any meaning may seem counter-intuitive, but it actually simply positions a piece of information that has to be stored anyway in the most natural place for storing unpredictable information: the Encyclopedia. Completely parallel to any other Encyclopedia entry, items like those in (4) will be used in analyzing and interpreting complex items. A speaker who has never been exposed to the item *cobra cat* will assume that it should be interpreted compositionally based on the nouns *cobra* and *cat*. By the same token, a speaker who has never been exposed to a noun such as *blueness* will base their interpretation on the Encyclopedia entries for *blue* and *ness*, whereby the latter happens to have quite general meaning but plays a crucial role in assigning the correct functional structure.

1.2. Why Look Beyond English, and What Slovenian Can Offer

The data discussed by Lowenstamm, presumably selected because they are most representative of the phenomena discussed, are restricted to specific lexical classes: Latinate nominal and adjectival affixes. This may make the presented analysis suspect of obscuring the actual source of the generalization. First, an important portion of Lowenstamm's arguments are phonological. Numerous accounts in the phonological literature assume that speakers have access to the feature [+loan] and that such a feature can trigger and block pho-

nological processes (Jurgec 2008; Ito and Mester 2009; Simonović 2015). In other words, as long as no native examples are identified, the real question may be why (some) Latinate affixes enforce a reapplication of the stress rule. Second, the fact that all examples listed by Lowenstamm involve roots that occur in adjectival and nominal environments makes an alternative account involving productive conversion worryingly plausible. Thirdly and relatedly, if affixes are roots and can in principle surface under different categorial embeddings, in languages which have pronounced phonological asymmetries between lexical classes (Smith 2011), the same affixal roots should be able to surface differently under different embeddings, e.g., displaying different prosody, in line with what free roots do. However, since in English the main contrast in this domain is the prosodic contrast between nouns and verbs (see Smith 2016: 2 for an overview), this prediction cannot really be tested. Moreover, even if fully categorially versatile native affixes were found in English, some important cross-linguistic predictions made by Lowenstamm's account still could not be directly tested. For instance, English has a default inflectional class for each of the main categories, and all English affixes we have discussed fit unproblematically into these classes (e.g., *darknesses* vs. **darknessen*). Languages that have more complex inflectional systems may have to store more information on the inflectional class or even have the same affix under the same category correspond to different inflectional classes. Exploring versatile affixes in languages with more complex inflectional systems is therefore an important next step in understanding the amount of stored information for each of the categorial embeddings.

Slovenian turns out to be an ideal case study for a further exploration of the proposed model. It has native affixes which are categorially versatile, some of them appearing in all three major categories: nouns, verbs, and adjectives. Moreover, Slovenian displays prosodic asymmetries between lexical classes. Finally, it is a language with a rich system of inflectional classes, especially in the nominal and verbal domains. In this article, I will extend the approach sketched above to Slovenian. I will present an account of stress assignment in Slovenian and then focus on two affixes, *-av* and *-ov*, which show up across the three categories, and present an analysis of these affixes in the framework sketched above. The rest of this article is organized as follows. Section 2 presents an overview of the relevant properties of Slovenian stress across the three lexical categories and brings a proposal of how prosody assignment proceeds, both in environments with intertwining between roots and categories and in radical cores. Section 3 presents an overview and a formalization of the behavior of the two affixes in three categorial contexts. Section 4 summarizes the main findings of the paper and sketches the directions for further research.

2. Slovenian Stress: Lexical Classes, Morphological Structure, Default Stress

Standard Slovenian is a lexical prosodic system which comprises both stress and pitch-accent varieties. Stress varieties are in focus here, as a vast majority of consulted speakers only have contrastive stress (as further described in §3). It should be noted, however, that the few speakers from pitch-accent varieties converge with stress speakers when it comes to stress placement in the examples quoted in this article.

I open the section by considering stress both in words and in affixes in the three lexical classes in §2.1. In §2.2 I develop an account of how Slovenian affixes shift stress. In §2.3 I discuss the consequences of a system which allows contrastive lexical prosody on free roots (in the sense that they can surface without a complement), but does not allow any on affixal roots.

2.1. Stress and Morphological Structure in the Three Lexical Classes

For each category, I first turn to words of this category in general and then to the prosodic effects of affixes that belong to this category.

2.1.1. Nouns and Nominal Affixes

Noun forms typically consist of a stem and an inflectional ending. Each noun belongs to an inflectional class which comes with its own set of endings. Nouns allow stress on any syllable of the word, indicating that stress in nouns is lexical. This is shown below on four nouns which all have the nominative singular ending *-a*.[2]

(5) Variable stress in nouns

lúbenic-a 'watermelon-NOM.SG'
polítik-a 'politics-NOM.SG'
čičerík-a 'chickpea-NOM.SG'
gosp-á 'lady-NOM.SG'

Nominal derivational affixes are also specified for a declensional class and can be stress-attracting or stress-neutral. This is shown using the affix *-ic-*

[2] The following abbreviations are used throughout the paper: 1 = first person; ADJ = adjective; DEF = definite; DU = dual; F = feminine; INF = infinitive; M = masculine; NOM = nominative; PL = plural; PRES = present tense; SG = singular.

(specified for the same declensional class as the above nouns), which in this case derives the feminine counterpart of a masculine noun.

Table 1. Variable prosodic effects of *ica*-affixation

Masculine counterpart	**Feminine *ica*-counterpart**
prijátelj 'friend$_M$'	*prijátelj-ic-a* 'friend$_F$'
továriš 'comrade$_M$'	*tovariš-íc-a* 'comrade$_F$'

The examples in Table 1 show a two-way contrast. There are no affixes that impose stress on the inflectional ending, so there are no complex nouns of the type **prijatelj-ic-á*.[3] The non-existence of derivational affixes that impose stress on the inflectional ending is a generalization that holds of all adjectival and nominal affixes (as well as, vacuously, of all verbal affixes). We will return to this issue in §2.1.4.

In sum, Slovenian nouns display full lexical stress contrast, whereas nominal affixes display a two-way contrast: either attracting stress or having no effect on stress.

2.1.2. Verbs and Verbal Affixes

Slovenian verbs minimally have the structure stem + theme vowel + inflectional morphology. Each verb (and each verbalizing affix) belongs to a conjugation class. Conjugation classes can be seen as combinations of two theme vowels that have a complementary distribution: one surfaces in finite and the other in non-finite forms. In order to illustrate the inflectional class of a Slovenian verb, we use two forms: the infinitive (e.g., *or-a-ti* 'to plough') and the first-person plural form of the present tense (*or-je-mo* 'we plough').

Verbal prosody is far more restricted than is the case in nouns. The stress patterns possible in a verbal form are two: stress either falls on the theme vowel or on the syllable preceding it. This indicates that verbal stress is controlled by the theme vowel. However, the segmental content of the theme vowel is not sufficient to predict the stress pattern, as shown below on three verbs which have *-i-* as both theme vowels.

[3] Simplex nouns of the type *gosp-á* are also rare, *gosp-á* actually being the only one in its inflectional class for most speakers. However, inflection stress is common in other declensional classes, e.g., the main neuter declension (*zlat-ó* 'gold', *mes-ó* 'meat'). The generalization that no derivational affix imposes inflection stress holds of affixes of these classes as well.

Table 2. Variable stress in *i/i* verbs

INF	PRES.1PL	Gloss
páz-i-ti	páz-i-mo	'mind'
dob-í-ti	dob-í-mo	'get'
lom-í-ti	lóm-i-mo	'break'

Verbal affixes come with their own theme vowel and generally impose their own prosodic pattern, thereby deleting the pattern of the base. This is one of the reasons for analyzing the theme vowels as determining the prosody of verbs in Slovenian (as further elaborated in §3.1.1).

One of the very few exceptions from the restricted two-way prosodic contrast is a small set of denominal verbs derived by the verbalizer that shows up as the theme vowel *-a-* . These verbs can, in very few cases, preserve the nominal stress pattern, which places stress "earlier" than the syllable preceding the theme vowel.

Table 3. Preserved nominal stress in denominal verbs

INF	PRES.1PL	Gloss	Related noun	Gloss
málic-a-ti	málic-a-mo	'snack'	málic-a	'snack'
prídig-a-ti	prídig-a-mo	'preach'	prídig-a	'sermon'

Another verbalizer that can preserve nominal prosody will be discussed in §3.1.2. It should be noted that the number of verbs with "non-verblike" prosody (i.e., stress before the stem-final syllable) does not seem to exceed a dozen in any variety. Some varieties allow no such verbs at all. For instance, many varieties, among them colloquial Ljubljana Slovenian, can realize the two verbs quoted above as *málc-a-t* and *prídg-a-t*, with stem-final stress. In sum, while the exceptions are relevant and will be analyzed separately, virtually all Slovenian verbs have stress either on the theme vowel or on the syllable preceding it, a pattern best analyzed as theme-vowel controlled.

2.1.3. Adjectives and Adjectival Affixes

Simplex adjectives in modern Slovenian have a strong tendency towards stem-final stress (e.g., *zel[ɛ́]n* 'green'). Few simplex adjectives have penultimate stress in the form with no overt inflection (indefinite masculine, e.g., *v[ɛ́]llik* 'big'),

but stress becomes stem-final as soon as there is an overt affix (e.g., *velík-ega* 'big-M.GEN'). Adjectives derived from other classes can, however, maintain the stress of the base. As a consequence, in derived adjectives any syllable of the stem can be stressed. This is illustrated using the affix *-sk*. This affix derives relational adjectives that only have a definite form, which is why all forms in Table 4 end in the masculine definite ending *-i*.

Table 4. Preserved nominal stress in denominal adjectives

Relational *sk*-adjective	**Related noun**
máribor-sk-i	*Máribor* 'Maribor'
profésor-ski-i	*profésor* 'professor'
generál-sk-i	*generál* 'general'

In the case of affixes that contain stressable material, they can be either stress-neutral or stress-shifting, as shown below.

Table 5. Variable stress in *at*-adjectives

***At*-adjective**	**Related noun**
ápn-at/*apn-át* 'chalky'	*ápn-o* 'chalk'
brad-át 'bearded'	*brád-a* 'beard'

Summarizing, we can say that simplex adjectives have a strong tendency towards stem-final stress. On the other hand, derived adjectives can either preserve the lexical stress of other categories or have the stress pattern imposed by the stress-attracting suffix. As with nouns, we can observe a two-way distinction between stress-attracting and stress-neutral adjectival affixes.

2.1.4. Summary: Stress Across Categories in Slovenian

Regarding the relative dominance of lexical stress across categories, nouns allow the most prosodic contrast and are the only category that can have its lexical stress preserved in the verbal domain. This matches the existing cross-linguistic generalizations on noun privilege (Smith 2011). In terms of Optimality Theory (Prince and Smolensky 2002), this would be formalized using a special faithfulness constraint dominating general faithfulness (Beckman 1998). The relevant constraint ranking would be FAITH-NOUN>>FAITH, indicating that faithfulness in nominal environments is stronger than faithfulness in general.

The issue of lexical stress in verbs and adjectives is more complicated. On the one hand, if we take all members of the category as a whole into account, verbal stress is much more restrictive. Verbal stress is either on the stem-final syllable or on the theme vowel (except in a dozen verbs which preserve the nominal stress pattern with stress "earlier" on the stem, presumably due to Faith-Noun). Adjectives then seem much more permissive, as they allow all stress patterns that are attested in nouns, with the exception of stress on inflectional material. However, if we only take simplex members of each category as a starting point and move gradually towards complex items, the picture changes radically: simplex adjectives with overt inflection only allow stem-final stress, and the apparent diversity of stress patterns in complex adjectives is a result of the preservation of nominal stress (again, presumably due to Faith-Noun).

The exceptional restrictiveness of the verbal prosody seems quite reminiscent of systems that have predictable prosody in verbs and lexical stress in nouns, such as Spanish (see Roca 2005) or Hebrew (Becker 2003). In Slovenian, some minimal lexical contrast is allowed, but it depends on the lexical specification of the theme vowel, rather than on the lexical stress of the root.

Regarding stress patterns allowed in categories as a whole, as overviewed in Table 6 below, the only stress pattern possible in all categories is stem-final (in which the stressed syllable always precedes theme vowels and inflectional endings). Stem-final stress is by far most common in nouns, verbs, and adjectives in Slovenian. Simonović and Mišmaš (2020) found, based on 3,000 most frequent members of each of the three main categorial classes, that 63% of verbs, 70% of nouns, and 73% of adjectives have stem-final stress as the only option in the entire paradigm.

Stem-final stress is, at the same time, the pattern of all nominal and adjectival derivations in which the affix is stress-shifting (as there are arguably no derivational affixes longer than one syllable, excluding the inflectional ending). Taking this generalization as a starting point, in what follows I investigate how affixes influence stress in Slovenian and whether the two-way contrast between stress-affecting and stress-neutral affixes corresponds to any structural difference.

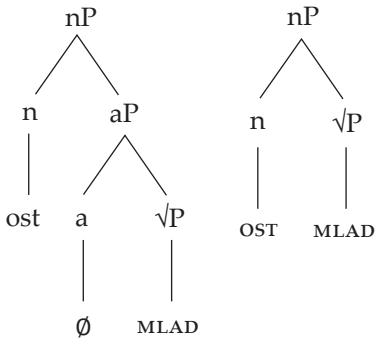
Table 6. Attested stress positions across categories

	Pre-stem-final stress	**Stem-final stress**	**Theme/inflection stress**
Nouns	✓	✓	✓
Verbs	marginal	✓	✓
Adjectives	✓	✓	X

2.2. How Affixes Assign Stress in Slovenian

In the research programme outlined in §1, the first place to look for structural correspondents of prosodic differences is the distinction between deradical and decategorial derivations, expecting more prosodic changes in the former and more faithfulness to the base in the latter. The first and most influential discussion of the contrast between decategorial and deradical derivations in the existing literature on Slovenian is Marvin 2002. Marvin presents a classic DM analysis of several nominalization patterns, among which are nominalizations in *-ost*, traditionally analyzed as deadjectival. Slovenian *ost*-nominalizations come in two flavors: one more productive, compositionally interpreted, and prosodically faithful to the base adjective, and the other, more rare, idiomatic, and characterized by the stress-shifting behavior of *-ost*. One of the relevant minimal pairs quoted by Marvin is *mlád-ost* 'youngness' (prosodically faithful to *mlád* 'young') versus *mlad-ost* 'youth, young years'. Marvin's analysis, which I follow, is that *mlád-ost* is a deadjectival nominalization, whereas *mlad-ost* is a root nominalization. The relevant Marvin-style trees for *mlád-ost* and *mlad-ost* are shown in (6).

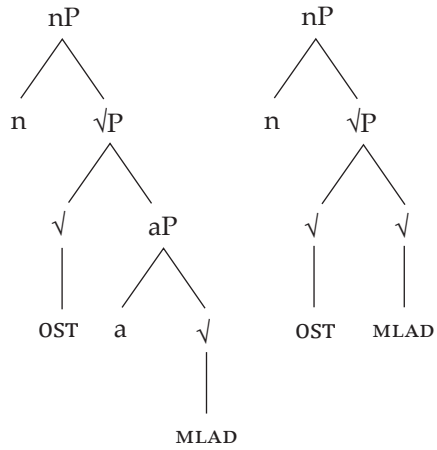
(6) Marvin-style trees for *mlád-ost* and *mlad-ost*



In order to account for the stress difference, Marvin assumes that *-ost* is lexically specified as stressed. This property of *-ost* is only realized when it is in the same phase with the root, i.e., in the root nominalization *mlad-ost*. In the real deadjectival nominalization, the output of the first round of spell-out is just the adjective *mlád*, and *-ost* comes too late to change its stress.

In (7) I show the Lowenstammian trees for *mlád-ost* and *mlad-ost*. In what follows, I argue that recasting the contrast between the two nouns in Lowenstammian terms brings an additional gain: it is not necessary to assume any lexical stress on *-ost*.

(7) *mlád-ost* and *mlad-ást*: the Lowenstammian analysis



The Lowenstammian analysis of the deadjectival nominalization *mlád-ost* parallels the classical analysis. Since the affixal root √OST is in a different phase from the root √MLAD, the affix is expected to be stress-neutral. The difference between the two accounts becomes clear in the case of the stressed *-ost* in the "idiomatic" nominalization *mlad-ást*. As can be seen in (7), the first phase now consists of a sequence of roots with no intermediate functional structure, i.e., a radical core. I submit that radical cores display total neutralization of lexical prosody. Specifically, radical cores always lead to the deletion of lexical stress and therefore always surface with the default stress pattern, which in Slovenian is stem-final stress. This is how the final stress of *mlad-ást* is obtained.

Support for the proposed analysis comes from two types of transparent deverbal nominalizations discussed by Marvin: *je*-nominalizations and *c*-nominalizations. Both of these nominalization types are convincingly analyzed as containing the passive participle, whose prosody they also preserve. The regular pattern is illustrated in Table 7 below.

Table 7. *Je*-nominalizations and *c*-nominalizations: The regular cases

PASS.PTCP	**Nominalization**
pítan 'fed'	*pítan-ec* 'animal for feeding' *pítan-j-e* 'feeding'
poslán 'sent'	*poslán-ec* 'envoy, representative' *poslán-j-e* 'sending, mission'

The mentioned prosodic faithfulness pattern is extremely regular, and Marvin does not mention any exceptions. However, some exceptions do exist. All four exceptions that were accepted by at least three of the seven consulted speakers are illustrated in Table 8 (the profile of the consulted speakers is described in §3).

Table 8. *Je*-nominalizations and *c*-nominalizations: Exceptional cases with stress shifts

PASS.PTCP	**Faithful nom.**	**Stress-shifting nom.**
míšljen 'thought'		*mišlj[ɛ́]n-j-e* 'thinking, opinion'
vprášan 'asked'		*vprašán-j-e* 'question'
šívan 'sewn'	*šívan-j-e* 'sewing'	*šiván-j-e* 'sewing kit'
múčen 'tortured'	*múčen-ec* 'tortured person'	*muč[ɛ́]n-ec* 'martyr'

A feature shared by all four exceptions is that they have stress unexpectedly shifted to the syllable preceding the inflectional ending. In some of the examples above, the stem-final position of the stress is somewhat obscured in the citation form due to schwa-epenthesis in forms without overt inflectional morphology (e.g., *mučen[ə]c*). Below I quote the dual forms of the four stress-shifting nominalizations, since the dual ending always has an overt exponent.

(8) Dual forms of stress-shifting *je*-nominalizations and *c*-nominalizations

mišlj[ɛ́]nj-i 'opinion-DU'
vprašánj-i 'question-DU'
šivánj-i 'sewing kit-DU'
muč[ɛ́]nc-a 'martyr-DU'

Following the classical DM analysis, where stress-attracting behavior of affixes is a consequence of lexical stress, in these exceptional items, the nominalizers in question would have to become root-selecting, because otherwise they would not be able to affect the stress of the derived word. On top of that, they would also have to become lexically stressed, or rather, display their being lexically stressed in this extremely limited number of cases, where they also show up in a configuration where they typically do not appear. My analysis of these exceptional cases is that they have indeed lost parts of the internal functional structure of their transparent counterparts but have kept the identical root structure. This is also evidenced by their specific, non-trans-

parent meaning. As for their stress pattern, it is a natural consequence of the structure in which they appear: the radical core.

A bold claim that can be formulated based on this discussion of a handful of examples involving three nominalizers is that all affixes that appear stressed simply correspond to radical-core structures, i.e., are root-selecting. Clearly, a model that dispenses with lexical prosodic marking on affixes would have an advantage over a theory that assumes such marking (e.g., that presented in Marvin 2002).

In order to show how stress assignment works in the proposed account, I go back to the minimal pair *mlád-ost* and *mlad-ost* and show how their stress is computed. I will use an OT grammar that will be sensitive to phasal information (for comparable approaches, see Gribanova 2015; Sande, Jenks, and Inkelas 2020). Since affixal roots do not have any lexical stress that influences the surface form, but free roots do, Slovenian is a system that would traditionally be analyzed as featuring *Root Faithfulness* (Beckman 1998). Now, since affixes are roots, we have to make a terminological intervention and speak of *Free Root Faithfulness* instead (referring to roots that can surface without a complement). The constellation in which special faithfulness is revealed is Faith-Special>>Markedness>>Faith. In our case, the relevant markedness constraint is the one responsible for (stem-)final prosody. I will use the constraint Iamb to this effect. Now the key ranking for Slovenian is Faith-FreeRoot>>Iamb>>Faith.

We can now turn to an analysis of *mládost*. If the ranking Faith-FreeRoot>>Iamb>>Faith defines the phonological grammar that applies at every round of spell-out, the adjective *mlad* will come out of the first round of spell-out with stress, regardless of whether it had stress underlyingly.[4] Now at the second round of spell-out, its stress mark will be regarded as a stress mark on a free root, and it will be protected by Faith-FreeRoot. This is shown in Table 9.

Table 9. OT tableau for *mládost* 'youngness'

mlád + ost	Faith-FreeRoot	Iamb	Faith
☞ a. mládost		*	
b. mladóst	*!		*

[4] I am not claiming that the rankings are exactly the same at every round of spell-out. There are actually indications that they are not for aspects of the phonological form which are not in focus here. Specifically, Slovenian has productive coda devoicing, and the adjective *mlad* is pronounced as [mlat] in isolation. Yet in the deadjectival nominalization, only [mladost] is encountered and never *[mlatost]. This indicates that only the final ranking enforces coda devoicing. I leave this issue to further research.

In Table 10, the same evaluation is shown assuming lexical stress on the affix. As expected, the effect of this underlying stress is not visible.

Table 10. OT tableau for *mládost* 'youngness' assuming lexically stressed *-óst*

mlád + ost	FAITH-FREEROOT	IAMB	FAITH
☞ a. mládost		*	*
b. mladóst	*!		*

Now we can turn to *mlad-ost*. In this case, there is a radical core immediately in the first phase. Since radical cores get spelled out to phonology with no prosodic specification whatsoever, there is no input stress in the tableau in Table 11. Note that both candidates violate FAITH constraints for having epenthetic stress (I omit the even higher-ranked CULMINATIVITY, which blocks the candidate with no stress). The winner gets decided by IAMB.

Table 11. OT tableau for *mladóst* 'youth'

mlad + ost	FAITH-FREEROOT	IAMB	FAITH
a. mládost	*	*!	*
☞ b. mladóst	*		*

2.3. Is it Good to Allow No Stressed Affixes?

A central feature of the model proposed here is that derivational affixes have no underlying prosody. An important point raised by one of the reviewers is to what extent a model that bans lexical prosody on affixes in a language, but allows it, for instance, in nouns in that same language, is more desirable than a model that allows lexical prosody everywhere. This question becomes even more urgent given the fact that this blocking of lexical prosody in derivational affixes was not and cannot be claimed to be universal. Indeed, already within Slavic there are languages in which derivational affixes need to carry prosodic specifications. For instance, Melvold (1990) convincingly shows that Russian affixes need the amount of lexical specification required for nouns. An illustrative example comes from the class of relational *ov*-adjectives (Melvold 1990:

206). In Table 12, three of these adjectives are shown together with their base nouns, which all belong to the same prosodic type (the type in which the stress remains on the stem in the paradigm). Based on data like this, Melvold (1990) argues for three different adjectival *-ov* affixes with three different prosodic specifications.

Table 12. Unpredictable stress in Russian relational *ov*-adjectives

***Ov*-adjective**	**Nominal base**
štámb-ov-yj	*štamb* 'tree trunk'
bred-óv-yj	*bred* 'delirium'
šum-ov-ój	*šum* 'noise'

The main problem with a model that would allow lexical prosody on derivational affixes in Slovenian because it is allowed in Russian would be that all the systematic differences between Russian and Slovenian would be coincidental. One important difference between Russian and Slovenian is the existence in Russian of the type illustrated by the last example in Table 12. Recall that Slovenian derivational affixes show a two-way contrast. They can be stress-neutral or stress-attracting, but if they are stress-attracting, they never introduce any type of stress other than stem-final. This was pointed out in §2.1.1 in the context of the categorial non-existence of derived words of the type **prijatelj-ic-á* in Slovenian, despite the existence of nouns of the type *gosp-á*. To illustrate the same problem with a more recent example, a model that allows prosodic marking on Slovenian affixes would need to account for the non-existence of the type **mladost-í* 'youth-DU' despite the existence of comparable unsuffixed words, such as *oblast-í* 'authority-DU'. A further empirical prediction of the model which allows lexical prosody on derivational affixes is that some root-selecting affixes should be stress-neutral, but that seems to be wrong (see Simonović 2020 for a discussion and several case studies).

Concluding our initial analysis of stress assignment in Slovenian, we now turn to the two affixes which appear in all three categorial environments.

3. *-Av* and *-ov* Across Categories

Having introduced the model in §1 and presented an overview of lexical classes, as well as an initial account of prosody assignment in §2, I now turn to the main empirical contribution of this article. Two affixes, *-av* and *-ov*, will be observed across categorial embeddings, in verbs, adjectives, and nouns.

First, based on the previous discussion of categorially versatile affixes in §1, it is expected that these affixes will have little or no semantic content of their own common to all their uses. Second, based on the discussion of stress assignment in §2, the stress of the versatile affixes is expected to vary, but this variation is expected to remain restricted to the two-way contrast between root-selecting and category-selecting behavior.

In order to capture the potential correlations with the different categorial embeddings and to target items in which *-av* and *-ov* are indeed pieces of morphology, there was quite a strict selection when creating the data set for this paper. First, only items which have *-av* and *-ov* as the last morpheme before the final categorial head are included. In Table 13, some frequent words are shown which have not made it into the data set for this article because further derivational affixes follow *-av* and *-ov*.

Table 13. Words containing *-av* and *-ov* followed by further pieces of derivational morphology

Word and gloss	**Translation**
del-av-ec *work*-av-c	'worker'
nog-av-ic-a *leg*-av-ic-NOM.SG	'sock'
il-ov-ic-a ?-ov-ic-NOM.SG	'clay'
grm-ov-j-e *bush*-ov-j-NOM.SG	'shrubbery'

Second, while some of the derivational patterns with *-ov* and *-av* are extremely productive, others are described in grammars and dictionaries, but seem extremely rare in modern Slovenian. In order to avoid basing the account on rare and unfamiliar words, strict criteria have been applied to the derived words formed using less productive patterns. Words derived with such patterns were extracted from the slWaC web corpus (895,903,321 tokens; Erjavec and Ljubešić 2014). Only those words that had more than 20 attestations were presented to Slovenian native informants in order to verify whether these items are used in modern varieties of Slovenian. For this purpose, seven native speakers were recruited from various traditional dialect areas of Slovenian (Carinthia, Lower Carniola, Upper Carniola, Littoral, Styria, and Prekmurje). They were exposed to all the collected derivations and asked

whether they used the word in question and if so, to pronounce them in a carrier sentence. Only those words that were verified by at least five speakers made it into the data set for this article. In what follows, the two affixes will be considered in verbs, adjectives, and nouns.

3.1. *-Av* and *-ov* in Verbs

Before considering the specific uses of *-av* and *-ov* in verbs, I will briefly summarize where we stand on stress assignment in verbs. As described in §2.1.2, verbs show theme-vowel-controlled stress, which can in very few cases get overridden by preserved nominal stress. Furthermore, stress on theme vowels is truly diacritic, as no correlation can be identified between stress assigned by the theme vowel and syntactic structure. This is already evident from simplex verbs like those in Table 2 (p. 205), but it will also become clear from the discussion in this section, where *-av* and *-ov* will appear selected by two different theme vowels and display different prosody in the same structural position. The OT formalization of this pattern would be adding the Faith constraint indexed to theme vowels above the ranking that we identified so far. This yields the ranking Faith-TV>>Faith-FreeRoot>>Iamb>>Faith. The obvious next question is how Faith-TV is ranked with respect to the other special faithfulness constraint mentioned in the previous section, Faith-Noun. The data reviewed in §3.1.2 will show that there is regional variation in this respect.

Turning now to the verbal uses of *-av* and *-ov*, both affixes are used for deriving secondary imperfectives from perfective verbs. In this use, both *-av* and *-ov* always determine the stress pattern of the resultant secondary imperfective verb, as shown by the examples in Table 14, where *-av* and *-ov* select perfective verbs and impose their own prosodic pattern in each case.

Table 14. Imperfectivizers *-av-a* and *-ov-a*

pfv.inf	ipfv.inf	Gloss
pre-kop-á-ti	pre-kop-áv-a-ti	‘dig’
pre-gléd-a-ti	pre-gled-áv-a-ti	‘check’
o-skrb-é-ti	o-skrb-ov-á-ti	‘treat’
pre-gléd-a-ti	pre-gled-ov-á-ti	‘check’

The two affixes are not in complementary distribution: some bases are targeted by both (e.g., *pregledati* ‘check’, above). As for prosody, the two affixes display the two types of behavior that we have already observed in §2.1.2 with

"traditional" verbalized roots: *-av* is always stressed, while *-ov* is followed by the stressed theme vowel in non-finite forms. The allomorph of *-ov* that surfaces in finite forms, *-u*, is always stressed, e.g., in *pregled-ov-á-ti* 'to check', but *pregled-ú-je-mo* 'we check'. In this sense, the imperfectivizers *-ov-a* and *-av-a* behave as "mini verbs" for all intents and purposes (see Quaglia et al. 2022 for an analysis of secondary imperfectivizers as mini verbs).

Tellingly, the prosodic pattern imposed by each theme vowel in the examples above reflects the most common pattern in verbs with this theme vowel in general. Toporišič (2000: 374) finds that most verbs with the thematic combination *a/a* have stress on the syllable preceding the theme vowel, whereas *ov+a/u+je* verbs virtually always have the stress on the theme in the non-finite, but stem-final stress in finite forms. This generalization extends to verbs in which the preceding sequence is not traditionally analyzed as a root (e.g., *k-ov-á-ti* 'to forge', *k-ú-je-mo* 'we forge'). We can confirm these tendencies based on the database from the project "Hyperspacing the Verb", in which the 3,000 most frequent Slovenian verbs were annotated for various properties, including theme-vowel class and stress. In this database, 92% of all verbs in the *a/a* class have stem-final stress. The verbs of the *ov+á/ú+je* class are considered a subclass of the *a/je* theme-vowel class, where 79% of all verbs have the alternating stress pattern attested in *ov+á/ú+je*. In sum, the theme vowels in question behave with *-ov* and *-av* the way they behave with most free roots.

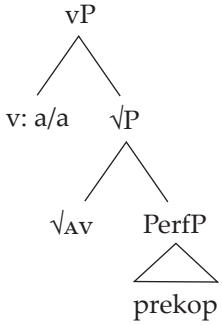
The described prosodic behavior of the two affixes is relevant for all their uses. However, while *-av* is specialized for secondary imperfectivization, *-ov* also combines with other categories, which is why their final (encyclopedic) representation will be discussed in separate sections.

3.1.1. *-Av* in Verbs

The representation of the secondary imperfective *prekopavati* is shown in (9). The label "PerfP" is purely descriptive in order to indicate that *-av* selects a perfective verb.[5]

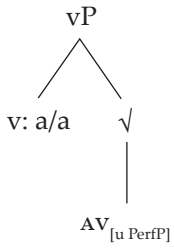
[5] The issue of the merge site of prefixes and, to a lesser extent, the destiny of the original theme vowel in secondary imperfectivizations are among the most hotly debated issues in Slavic morphosyntax (see, among many others, Svenonius 2004; Arsenijević 2006; Žaucer 2009; Gribanova 2013). I leave this issue aside here.

(9) The secondary imperfective *prekopávati*



The stored representation of the derivational affix would then be as in (10) below, with √AV being a transitive root specified for selecting perfective verbs and itself verbalized by a verbal head which will get realized as the *a/a* theme combination.

(10) Encyclopedia entry for √AV in verbal contexts



Note that v is a categorial head which eventually ends up realized as a theme vowel, but the relevant Vocabulary item also refers to the content of higher heads (e.g., T). In this case, the head v contains a reference to the combination of theme vowels *a/a*. So, strictly speaking, the piece of the tree for *prekopavati* that is shown in (9) would be spelled out as the verbal stem *prekopav*, and the remaining pieces would be added after higher heads get merged. Yet the portion that is shown in the tree crucially contains all the information shared by the forms of the verb, including the inflectional-class information. The surface stress pattern gets determined only when the theme vowel is spelled out, and since the theme vowel determines the ultimate surface pattern, there is no clue to the stress pattern at the previous stages.

3.1.2. *-Ov* in Verbs

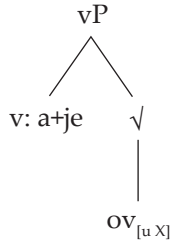
Unlike √AV, which consistently combines with perfective vPs (all verbs derived using √AV are imperfectivizations), √ov appears in combination with other categories as well, as shown in Table 15. Apart from clearly denominal derivations illustrated by the first two examples in Table 15, there are also derivations which seem to have entire phrases as bases (the third example) or lack direct connection (both phonologically and semantically) to the closest base (the bottommost example in Table 15).

Table 15. Verbalizations (other than secondary imperfectivizations)

Verbalization	Base/related word
pot-ov-á-ti (and *pót-ov-a-ti*) 'travel'	*pot* 'trip'
ver-ov-á-ti (and *vér-ov-a-ti*) 'believe'	*vér-a* 'faith'
vseb-ov-á-ti 'contain'	*v sebi* 'in oneself'
spošt-ov-á-ti 'respect'	(*póšt-a?* 'post')

Due to the versatile selectional behavior of √ov, I propose its encyclopedic representation to be as in (11). √ov is a transitive root that selects complements of any category and itself gets verbalized.

(11) Encyclopedia entry for √ov in verbs



As for the stress pattern, all imperfectivizations display the alternating pattern discussed above (as shown in *o-skrb-ov-á-ti* and *pregled-ov-á-ti* in Table 14 on p. 215) without any exceptions. This TV-controlled stress pattern is not only possible, but also preferred for all other verbs among all speakers, and a majority of the consulted speakers report not ever using any other pattern on verbs derived with √ov. However, some of the Carniola speakers allow a minor pattern with stress on the nominal base, illustrated by the versions in parentheses in Table 15.

My analysis of verb forms like *pót-ov-a-ti* and *vér-ov-a-ti* is that they incorporate an nP. Since all speakers allow forms where the stress of the noun is overridden by the TV-controlled stress, the ranking shared by all speakers is Faith-TV>>Faith-Noun. However, some Carniola speakers also allow the ranking Faith-Noun>>Faith-TV, which enforces the preservation of nominal stress. In at least one case, this analysis leads to the assumption of an nP which does not surface independently: the existence of the verb *var-ov-á-ti* 'guard' (also *vár-ov-a-ti* for some speakers) enforces the assumption of the nP *var*, which is not a word in Slovenian. Note, however, that the existence of such cases is predicted by the model outlined in §1 and that the same nP is attested in related adjectives (e.g., *vár-n-i* 'safe') and nouns (e.g., *vár-uh* 'guardian').

3.2. *-Av* and *-ov* in Adjectives

The adjectivized √av and √ov differ from each other in selectional behavior, quite similarly to their verbalized counterparts. However, it is now √ov that combines with a single category, nPs (with very few possible exceptions), whereas √av is versatile.

3.2.1. *-Av* in Adjectives

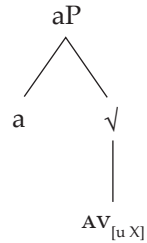
Even in our restrictive data set, adjectival *-av* can combine with bases which show up independently in the nominal and verbal domain, as well as with otherwise unattested bases, as illustrated by the topmost, the middle, and the bottommost block in Table 16, respectively. With each of these types of bases, *-av* can either behave as stress-shifting or stress-neutral, as illustrated by our examples. In each block, the first example shows stress-neutral behavior, whereas the second example shows stress-shifting behavior.

Table 16. *Av*-adjectives

***Av*-adjective**	**Base/related word**
búl-av 'lumpy'	*búl-a* 'lump'
blodnj-áv 'delusional'	*blódnj-a* 'delusion'
sprenevéd-av 'hypocritical'	*(sprenevéd-a-ti se)* 'dissimulate'
domišlj-áv 'conceited'	*domíšlj-a-ti si* 'imagine'
mút-av 'mute'	none
čig-áv 'whose'	none

Working on the conservative assumption that the stress-shifting behavior of the affix is due to a radical-core structure (where the default final stress is expected), all stress-shifting items have the same deradical structure. As for the adjectives where *-av* is not stressed, they cannot be root derivations. Examples such as *búl-av* and *sprenevéd-av* are then what they appear at first blush: denominal and deverbal adjectivizations. The cases such as *mút-av*, on the other hand, are then readily analyzed as incorporating a nominal/verbal structure, which happens not to be recorded as an independent word (although they can occur within related words, e.g., the noun *mút-ec* 'mute person').

(12) Encyclopedia entry for √AV in adjectives



This variety of different structures is actually expected under the assumption of a truly versatile affix, which is assumed to be recorded as represented in (12), i.e., as a transtitive root which can be combined with any kind of object.

3.2.2. *-Ov* in Adjectives

Unlike *av*-adjectives, which display extreme variation, *ov*-adjectives are quite a homogeneous class. Virtually all *ov*-adjectives are denominal and keep the stress pattern of the noun. There are two meanings that *ov*-adjectives cover productively. One is possessive. Such *ov*-adjectives are productively derived from all nouns denoting animate individuals of the masculine and neuter gender. In the examples in Table 17, the bases are given in the dual form in order to show their surface form in the environments with an overt ending. Note that *jelen* 'deer' and *dekle* 'girl' are masculine and neuter, respectively.

Table 17. Possessive *ov*-adjectives

***Ov*-adjective**	**Base/related word**
jelén-ov 'deer-POSS'	*jelén-a* 'deer-DU'
deklét-ov 'girl-POSS'	*deklét-i* 'girl-DU'

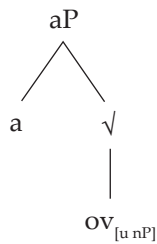
Next to these, there is a class of *ov*-adjectives that are traditionally described as kind adjectives, deriving from nouns which denote a type of material. These are illustrated in Table 18. Note that *paradižnik* 'tomato', *žveplo* 'sulfur', and *lipa* 'linden' are masculine, neuter, and feminine, respectively.

Table 18. Kind/material *ov*-adjectives

***Ov*-adjective**	**Base/related word**
paradížnik-ov 'tomato$_{ADJ}$'	*paradížnik* 'tomato'
žv[é]pl-ov 'sulfuric'	*žv[é]pl-o* 'sulfur'
líp-ov 'linden$_{ADJ}$'	*líp-a* 'linden'

Both uses are compatible with the general nP-selecting representation in (13). Still, in order to exclude *ov*-possessives derived from feminine nouns (e.g., **Uršk-ov* for 'Urška's', where the correct form is *Uršk-in*), it is necessary to further refine the structure. This refinement leads to two separate Encyclopedia entries. Such a refinement is presented in Simonović and Mišmaš 2020. The possessive √ov then selects those nPs which are headed by an *n* that already carries the specification of the masculine/neuter declension. The √ov that derives kind adjectives, on the other hand, is specified as selecting nPs with no specification for declension class. As for the meaning of the resultant adjectives, Simonović and Mišmaš (2020: 93) suggest that "the possessive meaning might be the default meaning for an adjective derived from an animate noun". A similar proposal is made for the kind meaning. These authors also present data from other languages, where one of these meanings is achieved without any additional morphology (as in the English *bean soup*).

(13) Encyclopedia entry for √ov in adjectives



Finally, quite similarly to the nominalizations discussed in §2.2, there are two *ov*-adjectives which reveal a deradical structure. These are the possessive pronominal *njeg-[ɔ́]v* 'his' and the adjective *kralj-év* 'royal'. *Njeg-[ɔ́]v* is also

unique in the sense that its base is not attested as an independent stem. To be sure, there exists *njega* as the genitive/accusative form of the pronoun *on* 'he', but this form cannot in any reasonable way be segmented into *njeg+a* (rather, it is *nj+ega*, as in the adjectival genitive/accusative form *lep-ega* 'beautiful'; cf. also the dative forms *nj-emu* and *lep-emu*, instrumental *nj-im* and *lep-im*, etc.). This unavailability of a transparent link to the base seems to block a denominal structure. On the other hand, the other possessive pronominal in *-ov*, *njihov* 'their', properly contains the genitive/accusative form *njih* and has the expected stress pattern *njíhov*.

3.3. *-Av* and *-ov* in Nouns

As with the verbal and adjectival domains, √Av and √ov have rather different functions in the nominal domain. √Av behaves as a nominalizer and is always stressed. √ov, on the other hand, cannot be unproblematically classified as a nominalizer, as it shows up as part of a root allomorph and as a case ending and displays different stress patterns in these two functions. I will include an analysis of this nominal *-ov* for completeness and in order to explore how far the proposed analysis can get us, but there are good reasons for considering this analysis separately from the rest.

3.3.1. *-Av* in Nouns

The nominal *-av* is always stressed. It is unique in our sample in that it shows up in three different declension classes. Two of them are attested by single items illustrated in Table 19. The noun *rok-áv* belongs to the main masculine declension, whereas *ljub-áv* belongs to the class of feminine nouns which have a null ending in the citation form.

Table 19. *Av*-nominalizations

***Av*-noun**	**Base/related word**
rok-áv 'sleeve'	*r[ɔ]k-a* 'hand'
ljub-áv 'love'	*ljub* 'dear'

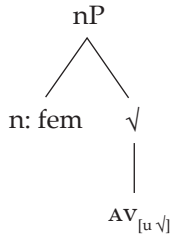
The remaining *av*-nominalizations belong to the main feminine declension with the citation form in *-a*. Based on phonological effects, two versions of *-áva* can be identified, a more common non-palatalizing version and a more rare palatalizing version, which could also be represented as *-java*. The more

common version is illustrated in Table 20 and its encyclopedic representation is given in (14).

Table 20. *Av-a*-nominalizations

***Ava*-noun**	**Base/related word**
vez-áv-a 'binding, inflection'	*véz-a-ti* 'bind'
preslik-áv-a 'mapping'	*preslík-a-ti* 'map'
skušnj-áv-a 'temptation'	*skúšnj-a* 'rehearsal'
nar-áv-a 'nature'	none

(14) Encyclopedia entry for √AV in *ava*-nouns

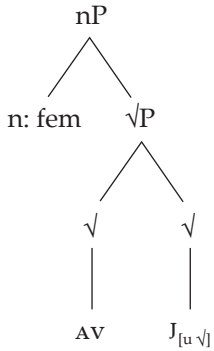


The *java*-class, illustrated in Table 21 below, displays regular palatalization of the final consonant(s) of the base. In Table 21, the first chunk is already shown palatalized, but a more accurate representation would be first having the morpheme *j* separately, for instance /pust+j+av+a/, and then having phonology turn this into *puščava*. Due to the presence of the palatalizing element, the encyclopedic representation in (15) on the following page involves a separate root √J (independently argued for in Simonović 2020).

Table 21. *Jav-a*-nominalizations

***Java*-noun**	**Base/related word**
pušč-áv-a 'desert'	*pust* 'desolate'
viš-áv-a 'height'	*vis-ok* 'high'
zmešnj-áv-a 'confusion'	*zmeš-a-ti* 'confuse'

(15) Encyclopedia entry for √AV in *java*-nouns



A remark is in order concerning the relation between the representations in (14) and (15), because it is clear that the latter can be subsumed under the former (because √J is a root). The reason why the combination /java/ got its own representation lies in the fact that this combination of affixal roots seems to be frequent enough to be recorded. The issue of recorded combinations of affixal roots is an important one, yet given the limited sample size in this article, it is an issue I have to leave to future research.

3.3.2. *-Ov* in Nouns (A Tentative Unification)

The affix *-ov* is not generally viewed as a nominalizer in the literature on Slovenian, and there is indeed no *-ov* morpheme comparable to the nominal *-av* in Slovenian. There are two morphemes, however, which surface as *-ov* in the nominal inflection. As previewed above, I am reviewing these two instances of *-ov* in order to explore any possible links to the clearly derivational instances of *-ov* discussed in the previous sections and the applicability of the general model proposed in this paper.

One inflectional *-ov* is the genitive dual/plural ending, which applies to virtually all masculine nouns, illustrated in Table 22 on the opposite page. The other *-ov* appears in a limited number of monosyllabic masculine stems, where *-ov* functions as the dual/plural augment. In this limited set of nouns (Mirtič (2016) found no more than 40 in modern Slovenian), *-ov* appears in all dual and plural forms in front of the regular case ending, with one important exception: in cases where the augment is expected to be followed by the homonymous genitive ending, only one *-ov* surfaces, as shown in Table 23.

Table 22. Declension of *šal* 'scarf'

	Singular	**Dual**	**Plural**
Nominative	šál	šál-a	šál-i
Genitive	šál-a	šál-**ov**	šál-**ov**
Dative	šál-u	šál-oma	šál-om
Accusative	šál	šál-a	šál-e
Locative	šál-u	šál-ih	šál-ih
Instrumental	šál-om	šál-oma	šál-i

Table 23. Declension of *val* 'wave'

	Singular	**Dual**	**Plural**
Nominative	vál	val-**[**ɔ**]v**-a	val-**[**ɔ**]v**-i
Genitive	vál-a	val-**[**ɔ**]v** (*val-**ov**-**ov**)	val-**[**ɔ**]v**
Dative	vál-u	val-**[**ɔ**]v**-oma	val-**[**ɔ**]v**-om
Accusative	vál	val-**[**ɔ**]v**-a	val-**[**ɔ**]v**-e
Locative	vál-u	val-**[**ɔ**]v**-ih	val-**[**ɔ**]v**-ih
Instrumental	vál-om	val-**[**ɔ**]v**-oma	val-**[**ɔ**]v**-i

In what follows, I will summarize and then refine the OT analysis presented in Simonović and Mišmaš 2020. This analysis combines DM representations with an OT evaluation that makes reference to paradigms, both in having evaluations of entire paradigms in the spirit of McCarthy 2005 and in the sense of referring to the citation form (adopting a constraint from Pertsova 2015). Given that paradigms are typically claimed to have no status in DM (see, for example, Bobaljik 2008 for an explicit criticism of the evaluation of entire paradigms), a paradigm-free alternative would be preferable. However, I do not see how the reference to paradigms can be obviated in this case and will therefore keep this aspect of the proposed analysis. One aspect of the analysis presented by Simonović and Mišmaš (2020) that I will not address here is the claim that the genitive dual/plural *-ov* and the augment *-ov* are the same morpheme. This is because nothing in their OT account depends on this assumption, and even forms like **val-ov-ov* are excluded by constraints which apply independently of the homophony/identity between the two affixes (but see Zec 2019 for an analysis which does invoke a ban on adjacent homophonous morphemes).

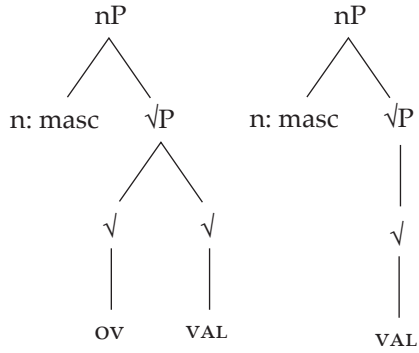
Simonović and Mišmaš (2020) argue for a null ending in the genitive dual/plural and analyze the unstressed *-ov* that appears in these forms as the Elsewhere allomorph, which is only allowed to surface in contexts where its insertion blocks syncretism with the citation form. The constraint that militates against syncretism with the citation form is CONTRASTCITATION from Pertsova 2015. As Simonović and Mišmaš (2020) point out, since the Elsewhere allomorph does not correspond to any morphosyntactic features, any number of its insertions are lexically sponsored (i.e., vacuously satisfy FAITH). However, the constraint *STRUCTURE (Prince and Smolensky 2002; Zoll 1993; but see Gouskova 2003 for a criticism), which militates against any amount of structure and is operationalized as assigning a violation mark for each morpheme, prefers candidates with fewer Elsewhere allomorphs. The evaluation which leads to the insertion of the Elsewhere allomorph is shown in Table 24. The candidates reflect surface forms, which means that every syllable-final /ʊ/ is shown as [w].

Table 24. OT tableau for *šalov* 'scarf$_{GEN.DU/PL}$'

/ʃal/ + Ø$_{GEN.PL}$	FAITH	CONTRAST CITATION	*STRUCTURE
a. ʃal		*!	*
☞ b. ʃalow			**
c. ʃalʊow			***!

The exceptional monosyllabic roots which surface with an augment (always realized as a stressed *-ov*) are analyzed as having a complex underlying representation which is essentially an unordered pair of two representations: one involving a root, and one involving a radical core with √ov selecting that root, as shown in (16).

(16) The two root allomorphs of *val* 'wave'



Now Simonović and Mišmaš (2020) assume that radical cores receive their default prosody at some point before the final evaluation and have the complex representation with prosody already assigned in the input of the tableau in Table 25: /vál/ ~ /valɔ́v/.

Table 25. OT tableau for *val* 'wave$_{NOM.SG}$' and *val[ɔ́]v* 'wave$_{GEN.DU/PL}$'

/vál/ ~ /valɔ́v/ + $\emptyset_{NOM.SG}$ … $\emptyset_{GEN.DU}$, $\emptyset_{GEN.PL}$	Faith	ConC	*Structure
a. ʋál … ʋál, ʋál		*!*	***
b. ʋalɔ́w … ʋalɔ́w, ʋalɔ́w		*!*	***
☞ c. ʋál … ʋalɔ́w, ʋalɔ́w			***
d. ʋál … ʋálow, ʋálow			****!*

Assuming that what chooses between the two allomorphs are phonological constraints (Kager 2008), Simonović and Mišmaš (2020) show that syncretism with the citation form can be avoided without resorting to the insertion of the Elsewhere allomorph: the longer allomorph is inserted in the dual and plural subparadigms, where the genitive forms have no ending, and thereby syncretism with the citation form is blocked. In order to appreciate the tableau in Table 25, which shows a parallel evaluation for all three forms which have no underlying ending, we need to recall how the stress pattern of the candidates in *-ov* reveals their structure. Since the augment *-ov* is part of a radical core, it will always carry stress, whereas the Elsewhere allomorph never does so. This enables us to identify *val[ɔ́]v* as a radical-core structure and *válov* as a combination of the shorter root allomorph and the Elsewhere allomorph.

I will address three aspects in which the analysis in Simonović and Mišmaš 2020 can be improved. First, in order for their analysis to work, *STRUCTURE needs to count the candidate *válow* with the Elsewhere allomorph as having two morphemes, while the candidate *valǒw* is considered as having a single morpheme. The authors state that "phonology does not have access to the internal structure of complex roots so it will consider the two stem allomorphs […] as introducing the same amount of structure". While this may be in line with the more general theory, it is an additional assumption, and a theory in which the preference for *valǒw* over *válow* follows from some more general principle would be preferred. Second, while Simonović and Mišmaš (2020) account for the fact that the two root allomorphs make a split across the number subparadigms (one goes to the singular, the other to the dual and plural), they actually do not offer an account of the fact that the shorter allomorph goes to the singular and the longer one to the dual and plural. If the tableau in Table 25 contained the candidate *valǒw … vál, vál*, that candidate would emerge as a co-winner. Third, on this analysis, the fact that in all the close to 40 items the shorter version of the root is a monosyllable is entirely accidental. All these three issues can be resolved by adding a single constraint into the picture: the one which strictly requires the stem to be a syllabic iamb. I will term this constraint STEM=SYLLIAMB (to avoid confusion with the omnibus constraint IAMB used above in my general account).

If the constraint STEM=SYLLIAMB is added above *STRUCTURE, it becomes irrelevant how *STRUCTURE counts the morphemes in the radical core (the additional violations if the core structure is counted as bimorphemic are added between brackets), as the winning candidate is decided before, as shown by the evaluation in Table 26 below. The reason why the candidate *valǒw … vál, vál* loses is also clear: it incurs an extra violation of STEM=SYLLIAMB.

Table 26. Revised OT tableau for *val* 'wave$_{NOM.SG}$' and *val[ǒ]v* 'wave$_{GEN.DU/PL}$'

/vál/ ~ /valǒv/ + $\emptyset_{NOM.SG}$ …$\emptyset_{GEN.DU}$, $\emptyset_{GEN.PL}$	FAITH	CONC	STEM=SYLLIAMB	*STRUC
a. vál … vál, vál		*!*	***	***
b. valǒw … valǒw, valǒw		*!*		***(***)
☞ c. vál … valǒw, valǒw			*	***(**)
d. valǒw … vál, vál			**!	***(*)
e. vál … válow, válow			**!*	*****
f. valǒw … válow, válow			**!	*****(*)

Note that the constraint *Structure remains relevant for the general picture, as Iamb only refers to the stem and therefore cannot make any difference between forms with additional Elsewhere allomorphs and those without them. This is made clear in the repeated tableau for *šálov* in Table 27, which now also includes Stem=SyllIamb.

Table 27. Revised OT tableau for *šalov* 'scarf$_{GEN.DU/PL}$'

/ʃal/ + ∅$_{GEN.PL}$	Faith	ConC	Stem=SyllIamb	*Struc
a. ʃal		*!	*	*
☞ b. ʃalow			*	**
c. ʃalʊow			*	***!

Concluding this discussion of the two declensional instantiations of *-ov*, it seems that at least the augment *-ov* is closely related to the derivational instances of *-ov* discussed in previous sections. As for the constraint ranking discussed in this section, it is fully compatible with that developed in the previous sections, as it involves low-ranked constraints that are usually never seen in action in cases where there is one underlying allomorph available. For example, the preference for stems being syllabic iambs can only be seen in action if multiple representations are lexically sponsored and only one of them satisfies this constraint. This is a typical feature of analysis involving unordered pairs of underlying representations (e.g., Kager 2008).

Concluding this case study on *-av* and *-ov* across categories, we can say that the expected dichotomy between stress-shifting root-selectors and stress-neutral category-selectors has been observed for each of the affixes. Even the possibly accidentally homonymous case ending *-ov* fits this general picture, since it gets added to a full nP and is therefore arguably not in the same phase with its base.

4. Summary and Further Directions

The main goal of this contribution was refining the affixes-as-roots approach by proposing an explicit account of stress assignment to radical cores and specifying the necessary encyclopedic entries of affixal roots. A further goal was to apply the refined model to two versatile affixes in Slovenian, which show up in the verbal, adjectival, and nominal domains. The application yielded an adequate account of the prosodic behavior of the two Slovenian affixes in

focus, which were shown to appear both as root-selecting and category-selecting in different environments. On the prosodic side, the affixes-as-roots approach has achieved dispensing with prosodic marking on Slovenian affixes, as their prosodic behavior was shown to follow from their selectional properties and the assumption that radical cores get spelled out to phonology without any prosodic specification. On the semantic side, both affixes were shown to have little or no content of their own, tending to behave as root extensions which enable derivation of related words. At first blush, the semantic emptiness of the versatile affixal roots seems to hold for other languages to which affixes-as-roots approaches have been applied (English in Lowenstamm 2014; Dutch in Creemers, Don, and Fenger 2017; and Catalan in Nevins 2015), but a more detailed cross-linguistic analysis is certainly desirable.

The complexity encountered in the Slovenian data justified focusing on those words which have the roots in focus as the topmost roots. As illustrated in §3, many words have the same roots in relatively lower positions, where they also influence the prosody of the resultant word. A detailed analysis of all uses of these roots is surely a worthwhile endeavor.

The discussion of the morpheme *-ov* in the nominal declension opens up the question of the distinction between inflection and derivation in the derivational-affixes-as-roots approaches. A more complete account of all the contexts in which these and other versatile affixes appear may open up the space for further unification of the many Encyclopedia entries that were proposed here. Just to name one promising prospective for further research, Zec (2019) analyzes the South Slavic augment *-ov* as the theme of the masculine nominal declension. Zec (2019) considers some of the contexts which were considered here (e.g., *val-ov-i* 'waves'), but also some others (e.g., the related adjective *val-ov-en*). While in these cases I proposed a root analysis, *-ov* does seem to have a special relation to the nominal domain. Apart from the suspicious identity with the Elsewhere allomorph and dual/plural augment *-ov*, there are quite a few nP-selecting instances of *-ov* in the contexts we have considered, e.g., in the denominal verbs (§3.1.2) and in possessive and kind adjectives (§3.2.2). Despite the existence of clearly non-nominal instances of *-ov* (e.g., the secondary imperfectivizer, §3.1.2), it remains a fact that no similar categorial grouping was found with *-av*. It is my hope that future research will further clarify the picture in this respect.

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The Numerals *Dva*, *Tri*, *Četyre* in the Novgorod Birch Bark Letters: A Diachronic Perspective

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Abstract: This article investigates the emergence of the cardinal numerals *dva* 'two', *tri* 'three', and *četyre* 'four' in nominal phrases in the Novgorod dialect during the 11th–15th centuries. An innovative approach presented here brings together three productive lines of inquiry—corpus analysis, historical linguistics, and diachronic generative syntax. A corpus analysis was conducted to identify 301 tokens of numeral-containing NPs and to trace the patterns of their diachronic development. The cardinal numerals 2, 3, 4 are shown to evolve from the adjectival "number" words through the process of grammaticalization, more specifically, numeralization. After the loss of dual number, the lower adjectival "number" words for 2, 3, and 4 turned into the cardinal numerals, as their lexically encoded numerosity became functionally encoded countability. The diachrony of the cardinal numerals in the Old Novgorod dialect has shown that the cognitive concepts of cardinality, individuality, and countability are inextricably connected. These concepts are grammatically encoded and subject to diachronic change. This study has demonstrated that a change in grammatical number (loss of the dual) led to the restructuring of countability and the rise of cardinal numerals.

1. Introduction[1]

Cardinal numerals in Russian provide a very interesting quandary for linguists. Specifically, the cardinal numerals 2, 3, and 4 behave syntactically differently than the cardinal numerals 5 and greater. Despite the fact that Russian is organized as a singular-plural language, this unique aspect of cardinal numerals 2, 3, and 4 is very puzzling, unless the question is examined diachronically.

Novgorod birch bark letters dating to the 11th–15th centuries provide a unique window into the historical development of the syntax and semantics of Russian nominal phrases containing the cardinal numerals *dva* 'two', *tri* 'three', and *četyre* 'four'. Unlike the literary language constrained by written conventions, the Novgorod birch bark letters represent a vernacular dialect

[1] The following abbreviations are used in this paper: SG = singular, DU = dual, PL = plural, CT = count form, MASC = masculine, FEM = feminine, NEUT = neuter, GEN = genitive.

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spoken by ordinary citizens of Novgorod of various social classes and sexes. The corpus analysis of birch bark letters conducted in this study allows us to analyze the use and occurrence of linguistic forms of the numerals 2, 3, and 4 which have not been previously analyzed.

It is well known that Russian nominal phrases modified by the cardinal numerals 2, 3, and 4 exhibit several interesting morphosyntactic properties, including a "count-form" suffix marked on the nouns in these numeral phrases. In contemporary Russian, the "count form" is expressed by the suffix *–a* on masculine and neuter nouns, while on feminine nouns it is encoded by the suffixes *-y/-i*, (1a–c). The "count-form" suffix, which looks like the marker of the genitive singular, has been analyzed in the literature in various ways: as paucal case (Mel'čuk 1985; Franks 1994, 1995; Rappaport 2002; Ionin and Matushansky 2006, 2018), as paucal number (Baylin and Nevins 2008), and as a numberless category (Pesetsky 2013). No matter the analysis, a diachronic perspective allows us to establish the historical source of the "count-form" suffix.

(1) Contemporary Russian

a. dva/tri/četyre brat-a
two/three/four brother-MASC.CT
'two/three/four brothers'

b. dva/tri/četyre sel-a
two/three/four village-NEUT.CT
'two/three/four villages'

c. dve/tri/četyre knig-i
two/three/four book-FEM.CT
'two/three/four books'

Historically, the "count-form" suffix can be traced to the Novgorod dialect of Old East Slavic, where it marked dual number on nouns quantified by the cardinal numeral 2. After the loss of dual number in the nominal inflection, the dual suffix marked on nouns in noun phrases modified by the cardinal numeral 2 was repurposed in nominal phrases containing the numerals 3 and 4, where it appeared in a new capacity as a "count-form" suffix, (2). As a result of this diachronic change, nominal phrases with the cardinal numerals 2, 3, 4 formed a special subclass of numeral expressions characterized by a "count-form" suffix.

(2) Old Novgorod dialect

a. dva/tri/četyri god-a
two/three/four year-MASC.CT
'two/three/four years'

(2) b. dŭva/tri/četyri lět-a
two/three/four year-NEUT.CT
'two/three/four years'

c. dŭvě/tri/četyri grivn-ě
two/tri/four.FEM coin-FEM.CT
'two/three/four coins'

Although the diachronic development of Russian numeral phrases has been previously addressed by Suprun (1969), Žolobov (2002, 2003, 2006), and most recently by Stepanov and Stateva (2018) and Igartua and Madariaga (2018), it poses the following key questions about the syntax and semantics of nominal phrases with the cardinal numerals 2, 3, and 4 in Russian and other Slavic languages. These questions are the focus of the present article:

1. Why did the former dual suffix spread from nominal phrases with the cardinal numeral 2 into nominal phrases with cardinal numerals 3 and 4?
2. What is "special" in the semantics of the cardinal numerals? How does the semantics of the lower cardinal numerals 2, 3, 4 differ from the semantics of the higher cardinal numerals 5 and greater?
3. What can the diachrony of the cardinal numerals in the Novgorod birch bark letters tell us about the evolution of numerals in natural languages?

In this article, I analyze the semantics and syntax of nominal phrases containing cardinal numerals 1, 2, 3, 4 using a corpus analysis of birch bark letters (11th–15th centuries). I argue that the cardinal numerals 2, 3, 4 (as well as 5 and greater) in the Old Novgorod dialect emerged as a result of the process of grammaticalization. Originally, in combination with noun phrases, the "number" words for 1, 2, 3, 4 were adjectives, while the "number" words for 5 and greater were nouns. When the dual number was lost, it triggered grammaticalization of countability, and lexically encoded numerosity of the "number words" became functionally encoded countability of the cardinal numerals.

This article is organized as follows. In §2 I discuss the key points in the diachronic development of nominal phrases containing the cardinal numerals 2, 3, 4 in the Novgorod birch bark letters. In §3 I show the results of my diachronic corpus study. In §4 I present my analysis of the diachronic changes in the syntax and semantics of nominal phrases quantified by the cardinal numerals 2, 3, 4. In §5 I draw conclusions and discuss how diachronic changes in the syntax and semantics of nominal phrases with the cardinal numerals 2, 3, 4 in the Novgorod dialect inform our understanding of the semantic and

syntactic properties of numeral-containing expressions in Russian and other Slavic languages.

2. Diachronic Development of NPs with the Cardinal Numerals 2, 3, 4

2.1. NPs with the Numerals 2, 3, 4 in the Old Novgorod Birch Bark Letters (11th–13th Centuries)

In the Novgorod dialect of the 11th–13th centuries, the syntax of nominal phrases varied according to the cardinality of the numeral (Table 1).[2] The numeral *odinŭ* 'one' required the noun to appear in the singular. The numeral *dŭva* 'two' required the noun to be in the dual, while the numerals *tri* 'three' and *četyre* 'four' required the noun to be in the plural. With the numerals *pjat'* 'five' and greater, the noun was marked in the genitive plural.

The cardinal numeral 2 in combination with noun phrases formed the so-called *dual'nyj kvantitativ* (dual quantity), called so due to the dual number marked on nouns (Žolobov 2006: 86). Dual number marking was a hallmark feature that set nominal phrases with the numeral 2 apart from nominal phrases with the cardinal numerals 3 and 4, which required nouns to be marked in the plural.

The cardinal numeral 2 behaved syntactically and morphologically as an adjective and agreed with its head noun in gender, number, and case. Zaliznjak (2004: 166) notes that "from a syntactic perspective, *odinŭ*, *dŭva*, *tri*, and *četyri* are modifiers of the counted nominal object". The cardinal numeral *dva* was marked by the suffix *-a*, an instance of agreement in the masculine or neuter gender, dual number, and the nominative or accusative case, (3a–b). The cardinal numeral *dvě* was marked by the suffix *-ě*, an instance of agreement in the feminine gender, dual number, and the nominative case, (3c).

(3) Old Novgorod dialect (12th–13th centuries)

a. два моужа
dv-a muž-a
two-MASC man-MASC.DU.ACC
'two men' (1220–40, #600)[3]

[2] I follow a set-theoretic definition of cardinality according to which cardinality is the number of members in a set. Thus, the cardinality of a numeral is the number of members it contains as a set. For example, the cardinality of the numeral 2 $|\{a,b\}|$ is 2 because this set has two members.

[3] The birch bark letters are cited by number according to the numbering system used in the database of birch bark letters (www.gramoty.ru). The numbering of birch bark letters is the same across the sources cited in this article.

Table 1. Numeral-containing NPs in the Novgorod dialect (11th–13th centuries)

Gender	Num 1 + NP	Num 2 + NP	Num 3, 4 + NP	Num 5 + NP
Masc	odinŭ zolotnik-e one gold.coin-SG 'one gold coin'	dva zolotnik-a two gold.coin-DU 'two gold coins'	tri, četyre zolotnik-ě three four gold.coin-PL 'three, four gold coins'	pjaťʹ zolotnik-ovŭ five gold.coin-GEN.PL 'five gold coins'
Neut	odino lět-o one year-SG 'one year'	dva lět-a two year-DU 'two years'	tri, četyre lět-a three four year-PL 'three, four years'	pjaťʹ lět-ŭ five year-GEN.PL 'five years'
Fem	odina grivn-a one coin-SG 'one coin'	dŭvě grivn-ě two coin-DU 'two coins'	tri, četyre grivn-ě three four coin-PL 'three, four coins'	pjaťʹ grivn-ŭ five coin-GEN.PL 'five coins'

(3) b. дъва лѣта
dŭv-a lĕt-a
two-NEUT year-NEUT.DU.NOM
'two years' (1160–80, #113)

c. дъвѣ дѣжѣ
dŭv-ě děž-ě
two-FEM.DU.NOM barrel-FEM.DU.NOM
'two barrels' (1120–40, #863)

Unlike the numeral 2, the numerals 3 and 4 formed the so-called *malyj kvantitativ* (small quantity), which required nouns to be marked in the plural (Žolobov 2006: 101). Like the numeral 2, the cardinal numerals 3 and 4 behaved syntactically as adjectives, exhibiting agreement with the head noun in number and case but not in gender. In the Novgorod birch bark letters, the forms of the numerals *tri* 'three' and *četyre* 'four' do not show gender distinctions, and the same form is used both with feminine and masculine nouns; cf. (4a–b) and (4c–e).[4] Despite the lack of gender agreement, there is evidence of case agreement between the cardinal numerals 3 and 4 and the head noun, (4d–e). For example, the numeral 3 is marked in the instrumental case by the suffix *-ima* in agreement with the head noun *korob'ami* in (4d). It is harder to see case agreement between the numeral 4 and its head noun since the form *četyri* is syncretic in the nominative and the accusative cases, (4e).[5]

(4) Old Novgorod dialect (12th–13th centuries)

a. три годъи
tri godŭ-i
three year-MASC.PL.NOM
'three years' (1240–60, #61)

b. три гривьнѣ
tri griv'n-ě
three coin-FEM.PL.ACC
'three coins' (1180–1200, #726)

[4] In Old East Slavic, the cardinal numerals 3 and 4 showed gender agreement. The numeral 3 had the masculine form *trije* and the non-masculine form *tri*. Likewise, the numeral 4 had two forms: *četyre* when used with masculine nouns and *četyri* when used with non-masculine ones (Žolobov 2006: 101). The gendered forms of the cardinal numerals 3 and 4 are not attested in the Novgorod birch bark letters.

[5] I did not find any other case forms of the numeral 4 besides the nominative and the accusative in the birch bark corpus.

(4) c. чотири кони
čotyri kon-i
four horse-masc.pl.nom
'four horses' (1200–20, #194)

d. трима коробьами овсаними
tr-ima korob'-ami ovsani-mi
three-inst box-fem.pl.inst oat-fem.pl.inst
'three boxes of oats' (1400–10, #540)

e. въ цетыри кѫнѣ
vŭ cetyri kun-ě
for four coin-fem.pl.acc
'for four coins' (1140–1160, #776)

During the 11th–13th centuries, dual number expressed on nouns (and pronouns) was gradually getting lost both in Old East Slavic and in the Novgorod dialect. The loss of the dual is evidenced by dual/plural syncretism of the nominal suffixes. As shown in Table 2, neuter nouns showed dual/plural number syncretism and masculine/neuter gender syncretism; feminine nouns showed dual/plural number syncretism as well, but masculine nouns had not developed this syncretism yet.

Table 2. Nominal number inflections in the Old Novgorod dialect (adapted from Zaliznjak 2004: 96)

Declension type	Number		
	Singular	Dual	Plural
o-	Neuter -o	-a	-a
o-	Masculine -e	-a	-i, -ě
a-	Feminine -a	-ě	-ě, -y

The decline of dual number triggered a diachronic shift in the nominal phrases containing the numerals 2, 3, 4. The data from the Novgorod birch bark letters show that neuter nouns were the first ones to undergo a diachronic change since their dual suffix *-a* syncretized with the plural early in the 12th century. The reason for this early dual/plural syncretism was that in

the Novgorod dialect the dual suffix *-a* was used instead of the original Old East Slavic dual suffix *-ě* (Zaliznjak 2004: 166). For example, nominal phrases such as *dŭva lěta* 'two years' and *dŭva lukna* 'two barrels' in (5–6) had the same *-a* suffix as the plural nouns not quantified by numerals, such as *lěta* 'years' in (7). Later in the 14th century, the dual suffix *-a* started being used in nominal phrases with the cardinal numerals 3 and 4, such as *3, 4 lěta* '3, 4 years'.

(5) дъва лѣта
dŭva lět-a
two year-NEUT.DU
'two years' (1180–1200, #113)

(6) в҃: лꙋ̆кна
2 lukn-a
two barrel-NEUT.DU
'two barrels' (1180–1200, #671)

(7) мънога же в[ы] лѣта
mŭnoga že vy.DAT lět-a
many EMPH you year-ACC.PL
'many years to you' (1140–60, #503)

Following neuter nouns, feminine nouns were next to undergo a diachronic change in nominal phrases with cardinal numerals 2, 3, 4. In the Novgorod dialect, the feminine nouns of *a*-declension had two possible plural suffixes: *-ě* and *-y* (Table 2). Both suffixes were possible for plural nouns without quantifying cardinal numerals. However, only the suffix *-ě* was attested in numeral phrases with the cardinal numerals 3 and 4 in the Novgorod dialect (Zaliznjak 2004: 99).[6] We observe instances of dual/plural syncretism in the inflectional suffixes of the feminine nouns quantified by the numerals 2, 3,

[6] I found four instances of the plural suffix *-y* occurring with feminine nouns with the numerals 3 and 4 (1–4). Zaliznjak (2004: 99) suggests that these instances point to the original Old East Slavic plural form *-y* and not to the form *-ě* used in the Novgorodian dialect.

(i) г҃: гривьны
3 griv'n-y
three coin-FEM.PL
'three coins' (1160–80, #710)

(ii) г҃ грины
3 grin-y
three coin-FEM.PL
'three coins' (1075–1110, #909)

4, (8–10). These data show that as early as the 12th century, feminine nouns quantified by the cardinal numerals 2, 3, 4 formed a special subclass of numeral expressions characterized by an emerging count-form suffix.

(8) в: гривьнѣ
2 grivn-ě
two coin-FEM.DU.NOM
'two coins' (1160–80, #240)

(9) г гривьнѣ
3 grivn-ě
three coin-FEM.PL.NOM
'three coins' (1160–80, #240)

(10) въ цетыри кѫнѣ
vŭ cetyri kun-ě
for four coin-FEM.PL.ACC
'for four coins' (1140–60, #776)

Masculine nouns in nominal phrases with the numerals 2, 3, 4 continued to distinguish the dual suffix *-a* from the plural suffixes *-i, -ě* and showed no dual/plural syncretism, (11–14). During the 11th–13th centuries, the dual ~ plural opposition of the masculine nouns was clearly maintained, whereas no such opposition was present in the neuter and feminine nouns.

(11) конѧ в҃ и сторова
kon'-a 2 i storov-a
horse-MASC.DU two and healthy-MASC.DU
'two healthy horses' (1120–40, #842)

(12) ч[оти]ри кон[и]
čotyri kon-i
four horse-MASC.PL
'four horses' (1200–20, #194)

(iii) трѣ грѣвоны
trě grěvon-y
three coin-FEM.PL
'three coins' (1360–80, #366)

(iv) д҃ гривьны
4 grivn-y
four coin-FEM.PL
'four coins' (1075–1110, #909)

(13) три колотокѣ
tri kolotok-ě
three headdress-MASC.PL
'three headdresses' (1100–20, #644)

(14) д҃ золотьникѣ
4 zolotnik-ě
four gold.coin-MASC.PL
'four gold coins' (1100–20, #644)

2.2. NPs with the Numerals 2, 3, 4 in the Old Novgorod Birch Bark Letters (13th–15th Centuries)

During the 13th–15th centuries, nominal phrases with the numerals 2, 3, 4 continued undergoing a grammatical change which finally transformed them into a special subclass of numeral expressions with a count-form suffix. In the 13th–15th centuries, with the continued spread of the dual/plural syncretism, neuter nouns in nominal phrases with the numerals 2, 3, and 4 became marked by the former dual suffix *-a*. Feminine nouns were consistently marked by the dual suffix *-ě* (and its allomorph *-i*). This diachronic shift ended with masculine nouns assuming the dual suffix *-a* in nominal phrases with the numerals 3 and 4. Thus, during the 13th–15th centuries, nominal phrases with the cardinal numeral 2 (*dual'nyj kvantitativ* 'dual quantity') merged with nominal phrases containing the numerals 3 and 4 (*malyj kvantitativ* 'small quantity') and formed a new subclass of numeral expressions (*novyj malyj kvantitativ* 'new small quantity'); see Table 3 on the opposite page.

Let us examine the diachronic changes in numeral phrases with neuter, feminine, and masculine nouns in more detail. In the 13th–15th centuries, neuter nouns in NPs with the numerals 2, 3, 4 were already sharing the same dual/plural suffix *-a*, thus completing a merger between NPs quantified by the numeral 2 and those quantified by the numerals 3 and 4; see (15–16).

(15) :в҃: медвед҃на
2 medvedn-a
two bear.skin-NEUT.DU
'two bear skins' (1300–20, #65)

(16) д҃ блюда
4 bljud-a
four plate-NEUT.PL
'four plates' (1360–80, #261/262/263/264)

Table 3. Numeral-containing NPs in the Novgorod dialect (13th–15th centuries)

Gender	Num 1 + NP	Num 2, 3, 4 + NP	Num 5 + NP
Fem	odina grivn-a one coin-SG 'one coin'	dvě, tri, četyre grivn-ě (-i) two three four coin-CT 'two, three, four coins'	pjat' grivn-ŭ five coin-GEN.PL 'five coins'
Neut	odino bljud-o one plate-SG 'one plate'	dŭva, tri, četyre bljud-a two three four plate-CT 'two, three, four plates'	pjat' bljud-ŭ five plate-GEN.PL 'five plates'
Masc	odinŭ zolotnik-e one gold.coin-SG 'one gold coin'	dŭva, tri, četyre zolotnik-a two three four gold.coin-CT 'two, three, four gold coins'	pjat' zolotnik-ovŭ five gold.coin-GEN.PL 'five gold coins'

Feminine nouns in NPs with the numerals 2, 3, 4 were marked by the dual/plural suffix *-ě* as well as by the suffix *-i*. The latter was likely the result of a phonological change from /e/ to /i/ (Zaliznjak 2004: 25).[7] It is important to note that the suffixes *-ě* and *-i* appear to be in free variation even within the same document. For example, birch bark letters #278 and #521 contain both the suffixes *-ě* and *-i*, (17–21). The suffix *-i* in NPs with the cardinal numerals 2, 3, 4 is attested only in the birch bark letters of the later period dating to the 13th–15th centuries.

(17) в̄: куницѣ
2 kunic-ě
two marten-FEM.DU
'two martens' (1360–80, #278)

(18) г̄: куницѣ
3 kunic-ě
three marten-FEM.PL
'three martens' (1360–80, #278)

(19) д̄: куници
4 kunic-i
four marten-FEM.PL
'four martens' (1360–80, #278)

(20) г цетвероткѣ ржи
3 cetverotk-ě rži
three fourth-FEM.PL rye
'three fourths of rye' (1400–10, #521)

(21) г цет(ве)ретки пшеницѣ
3 cetveretk-i pšenic-ě
three fourth-FEM.PL wheat
'three fourths of wheat' (1400–10, #521)

Masculine nouns in nominal phrases quantified by the numerals 2, 3, 4 continued to resist the dual/plural syncretism until the late 14th century. The birch bark letters attest some occurrences of nominal phrases with the numeral 2 in which nouns were still marked by the dual suffix *-a*, whereas in nominal

[7] In the Novgorod birch bark letters, the sound /ě/, typically written as ѣ, is also orthographically represented by the letters *e*, *и*, ь (Zaliznjak 2004). In NPs with the cardinal numerals 2, 3, 4, the letters *e* and ь also occur on nouns as orthographic variants of the suffix *-ѣ* (*-ě*).

phrases with the numerals 3 and 4, nouns were marked by the plural suffixes *-i* and *-ě*; cf. (22–23). This evidence suggests that masculine nouns in NPs with the numerals 2, 3, 4 maintained the dual/plural opposition the longest.

(22) два ѡвиⷭна
dva ovin-a
two measure-masc.du
'two measures' (1400–10, #23)

(23) три руⷭблѣ
tri rubl-ě
three ruble-masc.pl
'three rubles' (1400–10, #521)

However, during the 13th–15th centuries, masculine nouns began to show the first signs of collapse of the dual/plural opposition in NPs with the numerals 2, 3, 4. The dual suffix *-a* marking nouns in NPs with the numeral 2 began to spread into NPs with the numerals 3 and 4, (24–25). The data from the birch bark letters corpus show that instances of the merger between NPs with the numeral 2 and NPs with the numerals 3 and 4 are occasional and not consistent throughout the period of the 13th–15th centuries. However, these data show the beginning of a diachronic change in numeral phrases with masculine nouns which became widespread only at the beginning of the 17th century (Žolobov 2002: 5).

(24) г҃: рꙋбла
3 rubl'-a
three ruble-masc.du/pl
'three rubles' (1300–20, #65)

(25) г҃ полосца
3 polosc-a
three rug-masc.ct
'three rugs' (1380–1400, #263)

2.3. Summary

During the 11th–15th centuries, nominal phrases containing the numerals 2, 3, and 4 underwent significant diachronic changes. We can identify two stages in their historical development: during the 11th–13th centuries and 13th–15th centuries. As shown in Table 4 on the following page, neuter and feminine nouns underwent inflectional dual/plural syncretism during the 11th–13th

Table 4. Diachronic changes in NPs quantified by the numerals 2, 3, 4 (11th–15th centuries)

	11th–13th centuries		13th–15th centuries
Gender	**NP + Num 2**	**NP + Num 3, 4**	**NP + Num 2, 3, 4**
Neuter	lět-a year-DU	lět-a year-PL	lět-a year-CT
Feminine	grivn-ě coin-DU	grivn-ě coin-PL	grivn-ě coin-CT
Masculine	zolotnik-a gold.coin-DU	zolotnik-ě gold.coin-PL	zolotnik-a gold.coin-CT

centuries, whereas masculine nouns developed dual/plural syncretism later, during the 13th–15th centuries. As a result of these diachronic changes, NPs quantified by the numerals 2 and NPs quantified by the numerals 3 and 4 merged into a new subclass of numeral phrases characterized by the count-form suffix.

3. Corpus Study of the Birch Bark Letters (11th–15th Centuries)

3.1. Method, Design, and Results

To investigate the distribution of nominal phrases with the cardinal numerals 2, 3, 4, a corpus analysis of 879 birch bark letters was conducted via the Russian National Corpus of Birch Bark Letters (http://ruscorpora.ru/new/en/search-birch-bark.html#) and the archive of birch bark letters (www.gramoty.ru). The Russian National Corpus of Birch Bark Letters was searched to identify all tokens of feminine, masculine, and neuter nouns quantified by the numerals 2, 3, 4. A sub-corpus of the total of 301 birch bark letters containing nouns quantified by the numerals 2, 3, 4 was extracted. These 301 birch bark letter tokens make up 94.06% of the total of 320 tokens modified by all types of numerals. Tokens modified by the numerals 2, 3, 4 were categorized according to three genders (feminine, masculine, and neuter), two declension subtypes (hard/soft stems), and two time periods (11th–13th and 13th–15th centuries). The results of the diachronic corpus study are presented below.

3.2. Feminine Nouns with the Numerals 2, 3, 4

During the 11th–13th centuries, both hard- and soft-stem feminine nouns quantified by the numerals 2, 3, 4 had syncretic forms when used with the nu-

meral 2 and the numerals 3 and 4. They were marked by the dual/plural suffix *-ě*. The data show that there were only three instances of the original Old East Slavic suffix *-y* in *3 griv'n-y* (#710), *3 grin-y* (#909), and *4 grivn-y* (#909), with the majority of tokens marked by the suffix *-ě* (Table 5).

Table 5. Inflections of feminine nouns (11th–13th centuries)

Feminine noun + 2, 3, 4			
Hard stem *-a*		**Soft stem *-ja***	**Total**
-ě	-y	-ě	
82 (90.1%)	3 (3.3%)	6 (6.6%)	91

The prevalence of the suffix *-ě* over the original Old East Slavic suffix *-y* confirms that the speakers of the Novgorod dialect used an innovated and distinct suffix *-ě* to mark nouns in nominal phrases with the numerals 2, 3, 4. The availability of the innovative suffix *-ě* in the Novgorod dialect allowed feminine nouns to develop a dual/plural syncretism between NPs with the numeral 2 and those with the numerals 3 and 4.

Figure 1 illustrates that the hard-stem *-a*-nouns marked by the suffix *-ě* make up 90.1% of the total number of suffixes. Soft-stem *-ja*-nouns marked by the suffix *-ě* contribute 6.6% of the total, with the suffix *-y* representing the remaining 3.3%. Importantly, both hard-stem and soft-stem feminine nouns became syncretic not only in the dual/plural number, but also in their

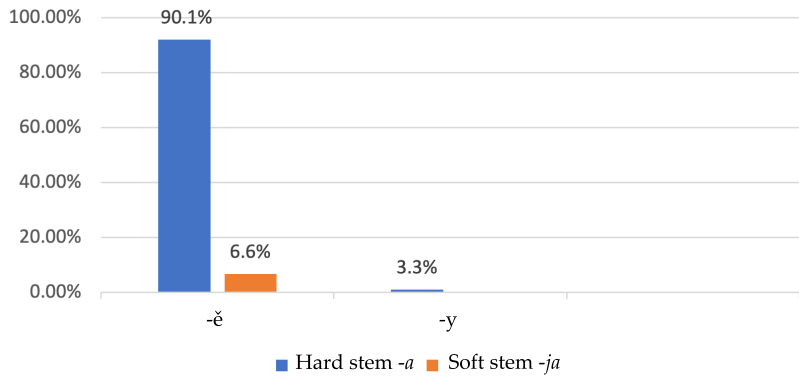


Figure 1. Feminine nouns with the numerals 2, 3, 4 (11th–13th centuries)

hard/soft declension subtypes, accounting for 98.87% of the total occurrence of the suffix *-ě*.

During the 13th–15th centuries, some hard- and soft-stem nouns were marked by the suffix *-i*, an allomorph of the dual/plural suffix *-ě* (Table 6). There is a single occurrence of the suffix *-y* on a hard-stem noun: *trě grěvon-y* (#366). Figure 2 below shows the distribution of both hard- and soft-stem nouns with the suffixes *-ě*, *-y*, and *-i*.

Table 6. Inflections of feminine nouns (13th–15th centuries)

Feminine noun + 2, 3, 4					
Hard stem *-a*		**Soft stem *-ja***	**Hard stem *-a***	**Soft stem *-ja***	**Total**
-ě	-y	-ě	-i		
16	1	0	25	10	52
(30.77%)	(1.92%)	(0%)	(48.08%)	(19.23%)	

3.3. Neuter Nouns with the Numerals 2, 3, 4

Although the total number of tokens of nominal phrases with neuter nouns is rather small (eight tokens), these data suggest that neuter nouns showed a merger between NPs quantified by the numeral 2 and NPs quantified by the numerals 3 and 4. Following Zaliznjak (2004: 166), I assume that during

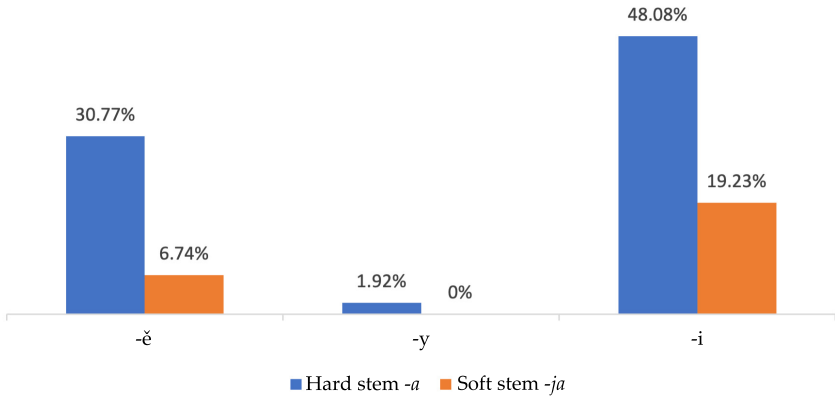


Figure 2. Feminine nouns with the numerals 2, 3, 4 (13th–15th centuries)

the 11th–13th centuries, neuter nouns quantified by the numerals 2, 3, 4 were marked by the suffix *-a* (Table 7). In the data, there were only two instances of neuter nouns occurring with the numeral 3: *3 lukn* and *3 lukon* in birch bark letter #671. Since the suffixes of these neuter nouns cannot be clearly identified, these two instances are not included in Table 7. The data from the 13th–15th centuries include only two instances of NPs with neuter nouns: *2 medvedna* (#65) and *4 bljuda* (#261). The pair *2 medvedn-a ~ 4 bljud-a* demonstrates the dual/plural syncretism of the suffix *-a*.

Table 7. Inflections of neuter nouns (1100–1300)

Neuter noun + 2		
Hard stem	**Soft stem**	**Total**
-a	-ja	
3 (75%)	1 (25%)	4

3.4. Masculine Nouns with the Numerals 2, 3, 4

During the 11th–13th centuries, the diachronic development of masculine nouns followed a different trajectory. In contrast to feminine and neuter nouns, masculine nouns quantified by the numerals 2, 3, 4 did not exhibit dual/plural syncretism but continued to distinguish between dual and plural suffixes. As Table 8 shows, 85.71% of the masculine nouns quantified by the numeral 2 were still marked by the dual suffix *-a*, distinct from the plural suffixes *-ě* and *-i*.

Table 8. Inflections of masculine nouns (11th–13th centuries)

Masculine noun + 2	**Masculine noun + 3, 4**	**Total**
-a	-ě, -i	
18 (85.71%)	13 (14.29%)	31

During the 13th–15th centuries, most masculine nouns continued to show resistance of dual/plural syncretism. The distribution of suffixes of masculine nouns and their corresponding occurrences is shown in Table 9 below.

Table 9. Inflections of masculine nouns (13th–15th centuries)

Masculine noun + 2	Masculine noun + 3, 4	Total
-a	-ě, -i, -a, -y	
8 (42.11%)	11 (57.89%)	19

As Figure 3 below illustrates, 42.11% of the masculine nouns in NPs with the numeral 2 are marked by the dual suffix *-a*, distinct from the plural suffixes *-ě* and *-i* marking masculine nouns in NPs with the numerals 3 and 4. However, some soft-stem masculine nouns, such as *rubl'* 'ruble' in *2 rubl'-a* and *3, 4 rubl'-a*, showed a tendency toward the dual/plural syncretism, but this tendency was not very strong during the 13th–15th centuries.

As the distribution of hard-stem and soft-stem masculine nouns shows, the dual and plural suffixes were still very distinct during the 13th–15th centuries (Table 10 on the opposite page). However, a detailed look at the data reveals that significant diachronic changes are already on the horizon.

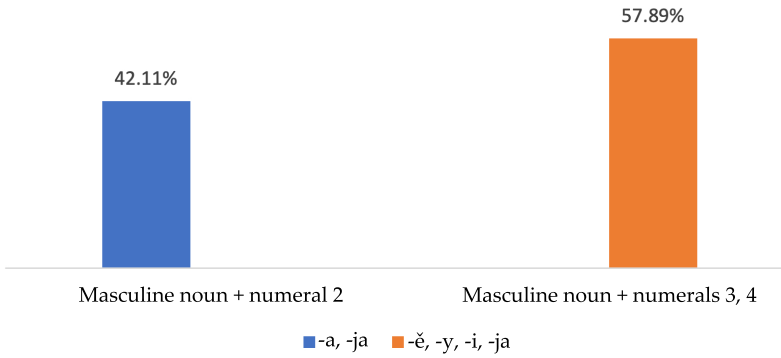


Figure 3. Masculine nouns with 2, 3, 4 (13th–15th centuries)

Table 10. Inflections of masculine nouns (13th–15th centuries)

Masculine noun + 2			**Masculine noun + 3, 4**				
Hard stem *-o*	**Soft stem *-jo***	**Total**	**Hard stem *-o***			**Soft stem *-jo***	**Total**
-a	-a		-ě	-y	-i	-a	
4 (50%)	4 (50%)	8	2 (18.18%)	1 (9.09%)	6 (54.55%)	2 (18.18%)	11

Figure 4 below illustrates a trend towards an emerging diachronic change in masculine nouns. Specifically, 18.18% of the soft-stem masculine nouns modified by the numerals 3, 4 are marked by the suffix *-a*, which is syncretic with its counterpart marking nouns quantified by the numeral 2. Although 18.18% is not statistically significant, it nevertheless marks the emergence of a new subcategory of nominal phrases with the cardinal numerals 2, 3, and 4.

3.5. Summary

The data presented in this diachronic corpus study show the gradual emergence of a new subcategory of nominal phrases containing the cardinal numerals 2, 3, 4 in the Novgorod dialect. Crucially, the emergence of these numeral phrases was possible due to the dual/plural syncretism of nominal inflections and the consequent merger between NPs quantified by the numeral 2 and NPs quantified by the numerals 3 and 4.

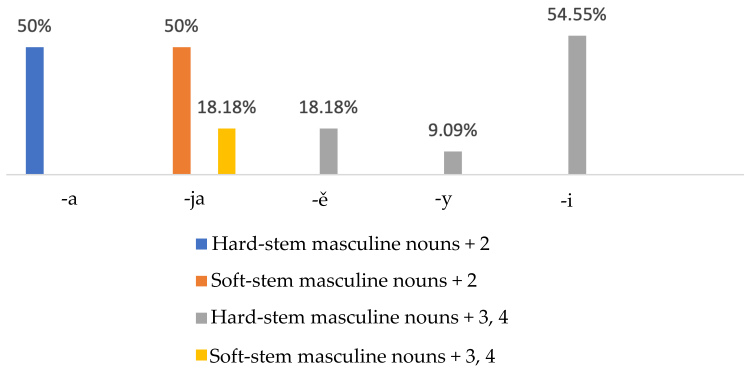


Figure 4. Masculine nouns according to the stem with 2, 3, 4 (13th–15th centuries)

4. The Syntax and Semantics of the Numerals 2, 3, 4 from a Diachronic Perspective

4.1. The Syntax and Semantics of Cardinal-Containing NPs

To understand how nominal phrases containing the numerals 2, 3, 4 emerged as a special subclass of numeral expressions, we need to look at the syntax and semantics of the cardinal-containing nominal phrases. In the analysis presented below, I show that the diachrony of nominal phrases with cardinal numerals can be explained if cardinal numerals are treated as properties in their semantics. I follow the property theory of predication and extend it to explain the semantics of cardinal numerals (Chierchia 1985; Chierchia and Turner 1988; Rothstein 2017). In the framework of property theory, I argue that both the lower (1, 2, 3, 4) and the higher (5 and greater) cardinal numerals have predicative semantics at the semantic type <e, t>, and they can also have the semantics of an individual property correlate at the semantic type <n>. When cardinal numerals appear pre-nominally, they function as prenominal modifiers at the semantic type <e, t <e, t>>. When cardinal numerals appear as bare numerals, they function as arguments at the semantic type <n>.

The property theory of the semantics of the cardinal numerals allows us to explain why Russian cardinal numerals form a cline from the more adjectival, such as the lower numerals 1, 2, 3, 4, to the more nominal numerals, such as 5 and greater. I further suggest that the syntactic behavior of Russian cardinal numerals follows from their semantics: the lower cardinal numerals 1, 2, 3, and 4 (adjectival) are mapped into the syntax as syntactic adjuncts to the NP, while the higher numerals 5 and greater (nominal) are mapped as syntactic subjects in the specifier of the NP projection.

Historically, Russian cardinal numerals did not belong to a single lexical category but were characterized by a lexical split: the lower numerals 1, 2, 3, 4 behaved syntactically as adjectives, while the higher numerals 5 and greater behaved syntactically as nouns. The adjectival nature of the cardinal numerals 1, 2, 3, 4 is evidenced by their agreement with the head noun in gender, number, and case, (26). The cardinal numerals *pjat'* 'five', *šest'* 'six', *sem'* 'seven', *osm'* 'eight', and *devjat'* 'nine' were count nouns belonging to the feminine *i*-declension type (Zaliznjak 2004: 113).[8] The nominal nature of the cardinal numerals 5 and greater is evidenced by the genitive plural they triggered on their nominal complement, (27). The syntactic facts about the adjectival nature of the lower numerals 1, 2, 3, 4 and the nominal nature of the higher numerals 5 and greater follow from the semantics of cardinal numerals.

[8] Zaliznjak (2004: 113) calls the numerals 5, 6, 7, 8, 9 "sčetnye suščestvitel'nye" (count nouns).

(26) на довоу иkоуноkоу
na dov-u ikounok-u
on two-DU.LOC icon-DU.LOC
'on the two icons' (1180–1200, #549)

(27) възьми оу р[а](ть)шь шьсть гривьнъ
vŭz'mi u Rat'š' š'st' griv'n-ŭ
take from Ratša six coin-GEN.PL
'Take six coins from Ratša.' (1160–80, #665)

I assume that cardinal numerals are words or phrases that denote a cardinality property (Chierchia 1985; Chierchia and Turner 1998; Rothstein 2017). This cardinality property of numerals can appear in two guises. First, cardinal numerals can denote a cardinality property at the predicative type <e, t> and can be predicated of a nominal argument. In this sense, cardinal numerals are adjectival. Second, cardinal numerals denote a cardinality property at the semantic type <n>, which itself can be an argument. In this second sense, cardinal numerals are nominals. It is Frege's (1892) original observation that properties have "two modes of presentation": on the one hand, they can be properties of arguments, while on the other, they can be arguments containing a cardinality property themselves. I will show that Frege's original observation about the dual semantic nature of properties is correct when it applies to cardinal numerals in the Old Novgorod dialect.

Let us look at the semantics of cardinal numerals as cardinality property predicates. For example, the cardinal numeral 2 will be analyzed as follows. The predicate interpretation of this cardinal numeral at the predicative type <e, t> is given in (28a–b). According to (28a), the cardinality of object x is n if the cardinality of the set of the atomic parts of x is n. Consequently, (28b) spells out the set of objects whose cardinality is 2. The denotation of the numeral 2 is given in (29). The numeral 2 at the predicative type <e, t> denotes the set of plural entities with atomic parts whose cardinality value is 2.

(28) a. $|x| = n \leftrightarrow |\{y: y \subseteq \text{ATOMIC } x\}| = n$
b. $\lambda x. |x| = 2$

(29) *two* <e, t>: $\lambda x. |x| = 2$ or $\lambda x. |\{y: y \subseteq \text{ATOMIC } x\}| = 2$

When a cardinal numeral at the predicative semantic type <e, t> composes with a noun in an NP, it functions as an intersective adjective and shifts to the predicate modifier type at <<e, t>, <e, t>>. I assume that count nouns are of type <e, t>. Singular count nouns denote sets of atoms, and plural count nouns denote the closure of the singular denotation under sum (Link 1983). For example, the interpretation of the NP *two books* proceeds in the following

way, (30). The denotation of the NP *two books* is the intersection of the denotations of the cardinal numeral *two* and the noun *books*.

(30) $[[\text{two books}]] = \lambda P\, \lambda x.P(x) \wedge |x| = 2$
$= \lambda x.\text{book}(x) \wedge |x| = 2$

Next, we will look at the semantics of cardinal numerals as individual correlates of properties. Numerals can denote an individual property correlate of the set of entities. I assume that individual property correlates are at the semantic type <n> like Chierchia's type π (Chierchia 1985; Chierchia and Turner 1988). Following Rothstein (2017), I assume that the cardinality function is a function from plural individuals into type *n*, (31). The operator $^{\cap}$ is a nominalization operator that turns predicative expressions into nominalized predicative expressions. This operator applies to a predicative interpretation at <e, t> and derives an individual property correlate. The operator $^{\cap}$ gives us an individual property-correlate interpretation, (32). Cardinal numerals at the semantic type <n> denote individuals with a particular cardinality property. Cardinal numerals at type <n> as arguments can be predicated at the semantic type <n, t>, (33).

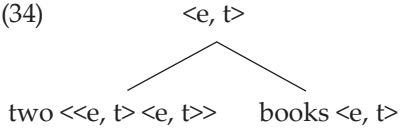
(31) $n = {}^{\cap}\lambda x.\ |x| = n$

(32) ${}^{\cap}\lambda x.\ |\{y: y \subseteq \text{ATOMIC } x\}| = 2$

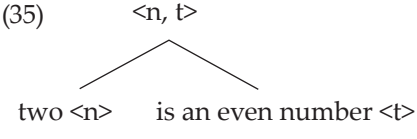
(33) Two is an even number.

Cardinal numerals denoting a cardinality property are ambiguous in their semantics between predicates and arguments. On the one hand, cardinal numerals can be interpreted as cardinality property predicates at type <e, t>, while on the other hand, they can be interpreted as individual correlate properties at type <n>. When a cardinal numeral combines with a noun in an NP, it functions as a predicate modifier at type <<e, t> <e, t>>. The semantic structure of cardinal numerals as predicate modifiers (*two books*) is given in (34). When a cardinal numeral combines with a predicate, it functions as an argument at type <n> (*two is an even number*). Cardinal numerals, as individual correlate properties, can be subjects of predication and thus function as second-order predicates at type <n, t>. The semantic structure of cardinal numerals as arguments is given in (35).

(34)

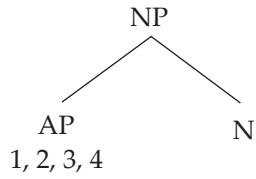


(35)

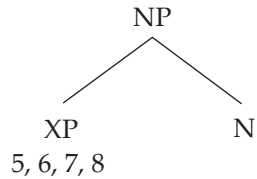


The ambiguous semantics of cardinal numerals can be easily translated into the syntax. When the semantic structures in (34–35) are mapped into the syntax, a cardinal numeral can be represented either as a syntactic adjunct or as an argument in the specifier position. The adjectival cardinal numerals 1, 2, 3, 4 are analyzed as syntactic adjuncts and have the syntactic structure as given in (36). The nominal cardinal numerals 5 and greater are analyzed as specifiers and have the syntactic structure as given in (37). The syntactic structures (36–37) show only a piece of the entire syntactic structure of cardinal-containing NPs. Their complete syntactic structure will be presented and explained in §4.2.

(36)



(37)



The evidence for treating the lower cardinal numerals 1, 2, 3, 4 as adjuncts comes from the fact that these numerals can be stacked with other adjectives within an NP, (38–39). Examples (38–39) show that the word order in which the numeral 2 appears in relation to an adjective is scrambled. In (38) the numeral 2 appears after an adjective, whereas in (39) it appears before an adjective.

(38)

шестокрїⷡленаѧ	анг̑ла	:в:	
šestokrilena-ja	angl-a	2	
six-winged-MASC.DU	angel-MASC.DU	two	

'two six-winged angels' (1180–1200, #549)

(39)

полотенеца	со	дова	цереленѧ
polotenec-a	so	dov-a	cerelena-ja
towel-NEUT.DU	approximately	two-NEUT.DU	red-NEUT.DU

'approximately two red towels' (1200–1220, #439)

The evidence for analyzing the higher numerals 5 and greater as arguments in the specifier of the NP position comes from the fact that these numerals are assigned structural genitive case by a functional syntactic category other than the numeral itself. For example, in a cardinal-containing NP, *šest-ě koun-ŭ* ('six-ACC coins-GEN'), the numeral 6 appears in the accusative case, while the noun appears in the genitive case, (40a). The mismatch in case assignment between the numeral and the noun shows that the noun is assigned structural genitive case not by the numeral but by the functional head (Q^0 in the QP projection).

(40) a. оу боѧна възьми шестѣ коунъ намьноую
u Bojana vŭz′mi šest-ě koun-ŭ nam′nou-ju
from Bojan take six-ACC coin-GEN.PL additional-FEM.SG.ACC
'Take six additional coins from Boyan.' (1160–80, #509)

b. осьмь высѧгла
os′m′ vysjag-l-a
eight.FEM.NOM break.away-PST-3.FEM.SG
'eight broke away' (1160–80, #724)

c. а нежѧтиници отроки били шьсть
a nežjatinici otroki bi-l-i šʹst-′
but Nežatinic's children beat-PAST-PL six-ACC
'But Nežatinic's children beat the six (of them).' (1140–1160, #855)

Bare cardinal numerals can appear as arguments in subject and object positions, (40b–c). For example, the numeral 8 is morphologically a feminine noun (*i*-declension). The bare cardinal numeral 8 is the subject of the sentence in (40b), as evidenced by the fact that the verb *vysjagla* agrees with it in the singular number, feminine gender, and 3rd person. In (40b) the subject *os′m′* is understood as a collective entity of eight individuals. In (40c) a bare cardinal numeral 6 appears in the object position and is interpreted as a collective entity of six individuals with a cardinality property (cardinality 6) defining these individuals.

4.2. Theoretical Components of the Proposal

I propose to analyze the syntactic structure of the cardinal-containing NPs in view of their semantics. More importantly, I argue that the syntax of the cardinal-containing NPs is a direct consequence of their semantic ambiguity: on the one hand, cardinal numerals can be predicate modifiers at the semantic type <<e, t> <e, t>>, while on the other hand, they can be individual correlates of a cardinality property at the semantic type <n>. I assume that the structure of an extended nominal phrase is complex and contains three structural layers: the quantificational layer (QP), the number layer (NumP), and the countability layer (CardP). I will further argue that these three layers play a key role in the syntax of the cardinal-containing nominal phrases.

First, let us consider the quantificational layer of cardinal-containing nominal phrases. It has been established that the quantificational aspect of Russian nominal phrases is expressed via the Genitive of Quantification (Babby 1987; Franks 1995; Bailyn 2004; Pesetsky 2013). The noun in an NP is marked in the genitive case after the higher (5 and greater) numerals, negation, and existential quantifiers, (41–44). In (41) the noun *člvk-ŭ* is marked in the genitive

plural by the suffix *-ŭ* after the numeral 8. The genitive case here is structurally assigned (by the Q^0 head), and it does not change even when the higher numeral appears in oblique cases, as shown in (42), where *osm-i* is used in the dative case. The nouns are also marked in the genitive case in the presence of negation, (43). The genitive of quantification also appears on nouns in the context of a covert (or an overt) existential quantifier, (44).

(41) и҃ чл҃вкъ взѧлѣ товара на е҃
8 člvk-ŭ vzjal-ě tovar-a na 5
eight person-GEN.PL took-PERF.3.PL product-GEN.SG on five

рублевъ
rublev-ŭ
ruble-GEN.PL

'eight people took some products for five rubles' (1380–1400, #249)

(42) по осми гривъ҆въно
po osm-i grivŭvŭn-o
for eight-FEM.DAT coin-GEN.PL

'for eight coins' (1140–60, #866)

(43) аже нмъ земли не досмотритъ
aže nmŭ zeml-i ne dosmotritĭ
even 1.PL.DAT land-GEN.SG NEG see

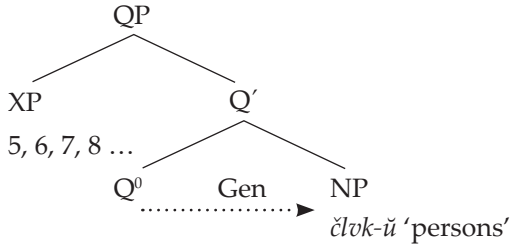
'Even we did not see after the land…' (1400–10, #933)

(44) да купи соли
da kupi sol-i
COMP buy salt-GEN.SG

'Buy some salt.' (1340–60, #354)

Syntactically, quantification is represented by the functional head Q^0 within the QP in an extended nominal projection, as given in (45) on the following page. The structure in (45) represents the sentential subject *8 člvk-ŭ* '8 persons' from example (41). The phonologically null head Q^0 assigns genitive as a structural case to its NP complement. The higher cardinal numeral occupies the specifier of QP. In example (42), the cardinal numeral *osm-i* 'eight' receives the dative case assigned by the preposition *po* 'for'; the dative case here is lexical. However, the noun *grivŭvŭn-o* 'coin-GEN' in this example receives the structural genitive case from the functional head Q^0 responsible for quantification.

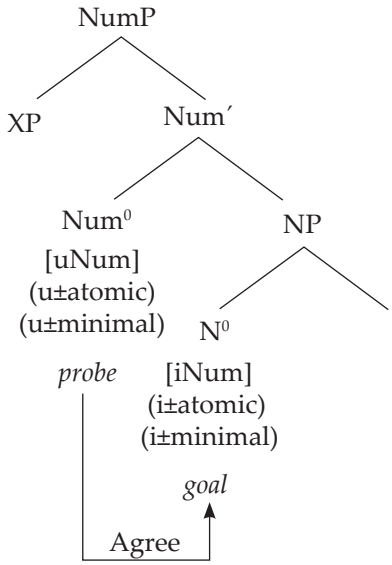
(45) Quantificational layer of a cardinal-containing NP



The next structural layer in an extended nominal projection is the number layer. I assume that a designated functional projection, the NumP, represents grammatical number of nouns (Ritter 1992). The Num^0 head hosts the syntactico-semantic number features. I further assume that number features are not primitive but compositional (Noyer 1997). Semantically, grammatical number can be represented by three number features—[±atomic], [±minimal], and [±additive]—which derive all crosslinguistically attested number systems via feature recursion (Harbour 2008, 2014). The Num^0 head is subject to crosslinguistic variation as to what number features are active or inactive in a particular language.

Consider the syntactic details of the number layer, illustrated in (46) below.

(46) Number layer of a cardinal-containing NP



In this structure, the NumP representing grammatical number sits above the NP.[9] The number head Num^0 takes the NP as its complement and hosts uninterpretable number features [uNum] (u±atomic) and (u±minimal), which are active in Old East Slavic. The nominal head N^0 has interpretable number features [i±atomic] and [i±minimal], which compose to derive the three-way number system (singular-dual-plural) of Old East Slavic. Valuation of number features ("agreement") obtains via the operation Agree (Chomsky 2005, 2008). The number head Num^0 is a probe which c-commands its goal nominal head N^0. After the feature valuation via Agree, uninterpretable number features get valued, i.e., obtain semantic content from the interpretable number features of the noun.

The compositional semantics of number features is as follows. I assume a lattice-theoretic semantic approach to number according to which number features compose with lattices in terms of superset and subset relations (Link 1983). Following Harbour (2014), I adopt the following semantic definitions of number features, (47). The [+atomic] feature partitions the lattice into atomic and non-atomic regions. The positive value of [+atomic] feature applied to a predicate P picks out atomic elements, while the negative value of this feature selects non-atomic elements. The [+minimal] feature applied to a predicate P captures sets of elements that have no proper subsets within a given region of the lattice. The [−minimal] feature picks out sets of elements with proper subsets.

(47) Definitions of number features

a. $\pm\text{atomic} = \lambda(x)\ (\neg)\ \text{atom}\ (x)$

b. $\pm\text{minimal} = \lambda P\ \lambda x\ (\neg)\ \neg\exists y\ (P\ (y)\ \wedge\ y \subset x)$

During the 11th–13th centuries, grammatical number in the Old Novgorod dialect had three values—the singular, dual, and the plural. These values are represented as feature combinations of the [±atomic] and [±minimal] number features, (48). Semantic composition of the number features proceeds as follows. The [±atomic] feature composes first, breaking up the lattice into atomic and non-atomic elements. The [±minimal] feature composes via the function application. It applies to atomic or non-atomic elements, checking for proper subsets. In the singular, the feature combination (+minimal (+atomic)) yields atoms without proper subsets, (48a). In the dual, the feature combination (+minimal (−atomic)) yields dyads without proper non-atomic subsets, (48b). In the plural, the feature combination (−minimal (−atomic)) produces non-atomic pluralities with proper non-atomic subsets, (48c).

[9] A DP layer can sit on top of the NumP to represent definiteness, but I omit it for reasons of simplicity.

(48) Grammatical number in the Old Novgorod dialect (11th–13th centuries)

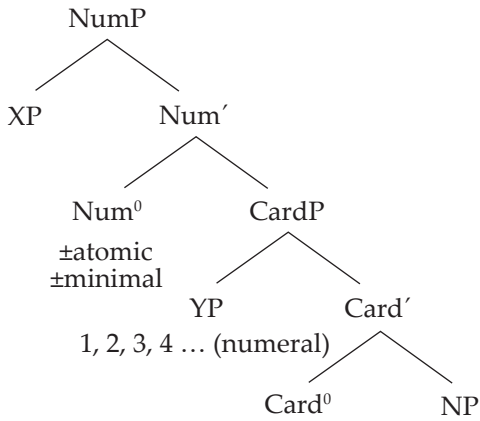
a. Singular (+minimal (+atomic))

b. Dual (+minimal (−atomic))

c. Plural (−minimal (−atomic))

I have presented two structural layers that make up the syntactic structure of cardinal-containing nominal phrases: quantification (QP) and grammatical number (NumP). The third structural layer that should be introduced into my analysis of cardinal-containing NPs is countability. The syntactic representation of countability is important for two reasons. First, the semantic notion of countability is essential to numerals, since they are words or phrases that are used to count. Second, countability must be grammatically encoded.

(49) The countability layer of a cardinal-containing NP



The syntactic structure which captures the countability layer is given in (49). I argue that countability should be represented by a designated functional projection CardP with the functional head Card⁰. CardP is positioned below NumP, and the functional head Card⁰ takes the NP as its complement. The cardinal numeral is in the specifier of the CardP position, which is similar to previous proposals (Selkirk 1977; Hurford 1987, 2003; Gawron 2002; Shlonsky 2004; Zabbal 2005; Watanabe 2010; Scontras 2013; Stepanov and Stateva 2018; Marti 2020).[10] The functional head Card⁰ contains a covert operator CARD, which denotes a two-place relation between the cardinal numeral and the

[10] The name of the functional projection hosting the cardinal numeral phrase is different in these accounts, but the position of the numeral is the same; it is in the specifier position of the NumeralP, MeasureP, or #P position.

noun phrase, (50). This operator takes a nominal predicate and returns a relation between numbers and individuals via the cardinality measure μCARD (Scontras 2013).

(50) [[CARD]] = λP λn λx. P(x) ∧ μCARD (x) = n

An important assumption that I need to make concerns the countability of nouns. To be counted by the operator CARD, the denotation of an NP must be countable. Counting presupposes individuating entities; therefore, nouns must be atomized and have the property of countability in their denotation. There are different approaches to how atomization of nouns can be achieved (Krifka 1989; 1995; Chierchia 1989, 1998, 2010; Rothstein 2010, 2017). Despite differences in the exact mechanism of atomization, these approaches agree that only atoms can be counted.

In my analysis, I follow Link's (1983) lattice-theoretic approach to mass/count-noun distinction and atomization. I assume that singular predicates have their denotation in an atomic domain and denote sets of atoms, (51a). Pluralities have their denotation in the Boolean semi-lattice and denote sets of atomic members closed under sum, (51b). In (51b) an operator * generates all the individual sums of members in the extension of the predicate.

(51) a. [[boy]] = {a, b, c} *semantically singular predicate*

b. [[*boy]] = {a, b, c, a+b, a+c, b+c, a+b+c} *semantically plural predicate*

To see how the operator CARD functions in counting individuals, let us take the cardinal-containing NP *two boys* as an example. The denotation of *two boys* is given in (52). First, the operator CARD takes the nominal predicate [NP boy] and number 2 and returns a set of individuals in P which consists of two atoms. Second, the [−atomic] number feature composes with the denotation of the cardinal-containing NP to produce a semantically (not grammatically) correct result, *two boy.* The suffix *-s* spells out the [−atomic] number feature, the plural, which is its correct grammatical number.

(52) [[[−atomic] [two CARD [NP boy]]]]
= λx. [[[NP boy]]] (x) ∧ CARD (x) = 2

4.3. Analysis of Diachronic Changes in Cardinal-Numeral-Containing NPs

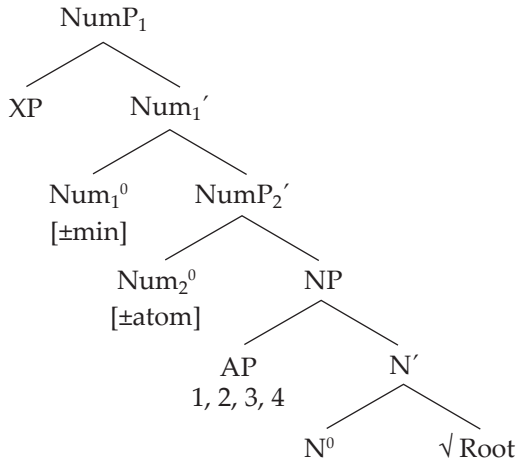
I have shown that three structural layers—quantification, number, and countability—are the essential theoretical components of my analysis of the syntax and semantics of cardinal-containing NPs. Now I turn to the analysis of the

diachronic changes in NPs containing the cardinal numerals 1, 2, 3, 4 in the Old Novgorod dialect. My main claim is that the cardinal numerals 1, 2, 3, 4 (as well as 5 and greater) underwent a syntactic reanalysis: namely, the process of numeralization (grammaticalization of countability), during which these numerals transformed from the lexical categories of adjectives and nouns into the functional category of the cardinal numerals proper. As a result of the process of numeralization, both the lower (adjectival) numerals 1, 2, 3, 4 and the higher (nominal) numerals 5 (and greater) became proper numerals with new structural properties.

The first stage (11th–13th centuries) in the diachronic development of NPs containing the cardinal numerals is represented in the syntactic structure in (53a). During this diachronic stage, the Num^0 head, responsible for grammatical number, hosted two number features, [±atomic] and [±minimal]. The [±atomic] feature is hosted in the lower $NumP_2$ since it composes first with the denotation of the NP by breaking NP denotation into atomic and non-atomic members. The [±minimal] feature is hosted in the higher $NumP_1$ since it is a function of the [±atomic] feature, which takes it and checks for minimal or non-minimal subsets.

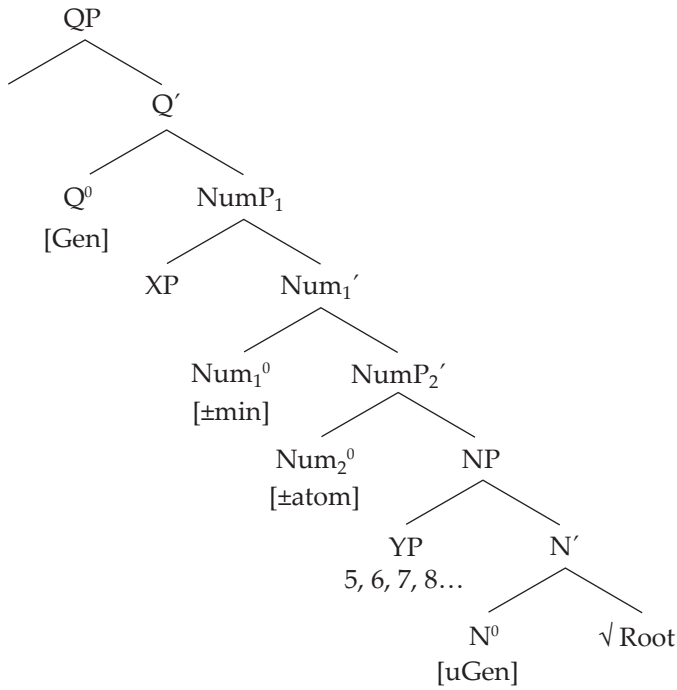
During the first stage (11th–13th centuries) of diachronic development, the lower adjectival numerals *odin* 'one', *dŭva/dŭvě* 'two', *tri* 'three', and *četyre* 'four' did not belong to the functional category of numerals proper yet; they were lexical "number" words. Recall that in Old East Slavic, as well as in the Old Novgorod dialect, the cardinal numerals 1, 2, 3, 4 behaved syntactically as adjectives, agreeing in number, gender, and case with their head noun. As shown in (53), the lower adjectival numerals 1, 2, 3, 4 were syntactic AP adjuncts to the NP.

(53) Diachronic Stage 1 (Old Novgorod dialect, 11th–13th centuries)



The syntactic structure of the higher cardinal numerals 5 and greater is given in (54) below. In this structure, the higher numerals 5 and greater are in the specifier of the NP. From this position, they move to the specifier of the QP to derive the surface word order. The quantificational head Q^0 acts as a probe with the structural genitive case feature [Gen], which values the unvalued case feature on its goal, the noun N^0. After the valuation of the genitive case feature is complete, the numeral YP moves to the specifier of the QP to satisfy the EPP feature requirement of its Q^0 head.

(54) Diachronic Stage 1 (Old Novgorod dialect, 11th–13th centuries)



Now we will turn to the compositional semantics of both higher and lower cardinal-containing NPs. Let us take *dva čeloveka* 'two persons' as an example to see how the compositional semantics delivers the correct interpretation of this cardinal-containing NP. The denotation of *dva čeloveka* proceeds as follows, represented in (55). The denotation of the NP *čelovek* 'person' is made countable in the lexicon. It has been atomized and contains sets of atoms. Thus, the cardinal numeral *dva* can easily combine with it. The cardinal numeral *dva* 'two', as a restrictive modifier at the semantic type <e, t <e, t>>, composes with the denotation of the NP predicate *čelovek* 'person' at the semantic type <e, t>. The cardinality of the numeral *dva*, which equals 2, in combination with the denotation of the NP *čelovek* delivers the correct composi-

tional result—*dva čeloveka* 'two persons', an intersective set with two atomic members.

(55) [[[+minimal [−atomic] [*dva* [NP *čelovek*]]]]] *dva čelovek-a* ('two persons')
= λx. [[[NP *čelovek*]]] (x) ∧ |x|= 2

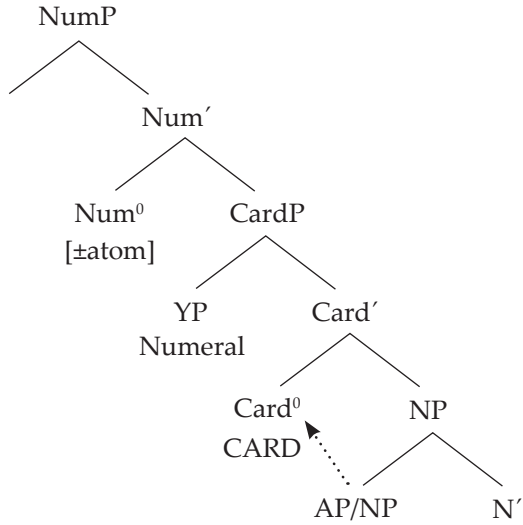
(56) [[[−minimal [−atomic] [*pjat'* [NP *čelovek*]]]]] *pjat' čelovek-ŭ* ('five persons')
= λx. [[[NP *čelovek*]]] (x) ∧ |x|= 5

Next, the number feature [−atomic] combines with the denotation of the NP *dva čeloveka* and checks for non-atomic members. Finally, the (+minimal) feature checks for the minimality of proper subsets and finds no non-atomic subsets, since the members of dyads are atomic. The dual suffix *-a* spells out the dual number on the noun *čelovek-a.* The semantic composition of an NP with the higher cardinal numeral 5, e.g., *pjat' čelovekŭ* 'five persons', proceeds in a similar way, represented in (56). The only difference is in the number specification of a plurality in a singular-dual-plural number system. A plural predicate has a (−minimal (−atomic)) number specification.

The second stage (13th–15th centuries) in the diachronic development of the cardinal-numeral-containing NPs is represented by the syntactic structure in (57). In this syntactic structure, an extended nominal projection consists of three structural layers: the QP (quantification), the NumP (grammatical number), and the CardP (countability), which takes an NP predicate as its complement.[11] In line with research on grammaticalization (Longobardi 2001; Roberts and Roussou 2003; van Gelderen 2011), I argue that lexical adjectives 1, 2, 3, 4 and nouns 5 and greater undergo the process of numeralization, during which their lexically encoded countability is grammaticalized via a new functional head, Card^0. As a result of reanalysis/recategorization, former "number" words have emerged as proper cardinal numerals (reanalysis is shown via a dotted arrow in (57) on the opposite page).

[11] In the structure in (57), the QP is not shown for reasons of space.

(57) Diachronic Stage 2 (Old Novgorod dialect, 13th–15th centuries)



I will start with the NumP projection responsible for the representation of the grammatical number. The functional Num⁰ head of this projection hosts only one feature [±atomic], because during this diachronic stage, the [±minimal] number feature becomes obsolete due to the loss of dual number. During the 13th–15th centuries, dual number, as a marked and unstable grammatical category, was gradually getting lost, until it was no longer part of the grammatical number system (see Noyer 1997; Harbour 2011; Nevins 2011; Slobodchikoff 2019 on the markedness of dual number).

As a result of the loss of the dual, a three-value number system (singular-dual-plural) was reduced to two values—singular and plural. Recall that dual number was represented by the combination of the (+minimal (−atomic)) features, whereas the plural had the (−minimal (−atomic)) feature specification in the earlier period ((58) repeated from (48)).

(58) Grammatical number in the Old Novgorod dialect (11th–13th centuries)

a. Singular (+minimal (+atomic))

b. Dual (+minimal (−atomic))

c. Plural (−minimal (−atomic))

Due to the dual/plural syncretism (sharing of the [−atomic] feature), Old Novgorod speakers were not getting enough evidence to keep the [±minimal] feature active in the grammar to distinguish the dual from the plural. Thus, the number feature [±minimal] was no longer used by speakers, leaving only

the [±atomic] number feature active in the grammar of the Old Novgorod dialect, (59). The [±atomic] number feature, which splits members of a set into atomic (singularities) and non-atomic members (pluralities), was used at this stage to represent singular and plural grammatical number, (60).

(59) (±minimal) → 0

(60) Grammatical number in the Old Novgorod dialect (13th–15th centuries)

a. Singular (+atomic)

b. Plural (−atomic)

I attribute the emergence of cardinal numerals as a distinct grammatical category to the grammaticalization (Longobardi 2001; Roberts and Roussou 2003; van Gelderen 2011) of countability. I propose that a functional projection CardP with the $Card^0$ head hosting a measure operator μCARD (adopted from Scontras 2013) is a new structural layer that was needed to accommodate the loss of dual number and grammaticalize the linguistic notion of countability in the grammar of the Old Novgorod dialect. CARD is a cardinality predicate that creates cardinal numerals. The denotation of the operator CARD is given in (61) (repeated from (50)). This operator creates a two-place relation between the cardinality *n* of a numeral and the denotation of an NP. Thus, counting is done via a covert functional operator CARD.

(61) $[[CARD]] = \lambda P\, \lambda n\, \lambda x.\ P(x) \wedge \mu CARD\ (x) = n$

At Diachronic Stage 1, the "number" words for 1, 2, 3, 4 were lexical categories—adjectives and nouns—whereas at Diachronic Stage 2, "number" words were reanalyzed as a functional category of numerals represented by a designated functional projection CardP.

4.4. Summary

The diachronic analysis presented above shows that the emergence of cardinal numerals in the Old Novgorod dialect is an instance of grammaticalization/numeralization, during which adjectival 1, 2, 3, 4 and nominal 5 and greater were grammaticalized as cardinal numerals. The grammatical category of cardinal numerals has emerged due to the reanalysis by speakers of both number features and grammatical categories. Specifically, the [±minimal] number feature, which distinguished the dual from the plural, was dropped, (62). Originally, "number" words, the adjectival 1, 2, 3, 4, and nominal 5 and greater, were reanalyzed as cardinal numerals counted via the functional head $CARD^0$, (63).

(62) Historical reanalysis of number features
[±minimal] → 0

(63) Historical reanalysis of lexical categories as functional
AP/NP lexical "number" words > functional CARD^0

5. Conclusion

This article was inspired by the puzzle of nominal phrases with the cardinal numerals *dva* 'two', *tri* 'three', and *četyre* 'four' in the Old Novgorod dialect and their occurrence in the birch bark letters dating to the 11th–15th centuries. In this article, I have investigated the reasons for and mechanisms of the emergence and diachronic development of these cardinal numerals. A detailed and systematic diachronic corpus analysis of 879 birch bark letters was conducted to identify a sub-corpus of 301 birch bark letters containing nominal phrases with the cardinal numerals 2, 3, and 4.

The main claim of my analysis of the semantics and syntax of cardinal-containing nominal phrases is that the cardinal numerals 2, 3, 4 (as well as 5 and greater) in the Old Novgorod dialect emerged as a result of the process of grammaticalization. Originally, in combination with noun phrases, the "number" words for 1, 2, 3, 4 were adjectives, while the "number" words for 5 and greater were nouns. When the dual number was lost in Old East Slavic, it triggered grammaticalization of countability, and the lexically encoded numerosity of "number words" became functionally encoded countability represented by a new grammatical class of cardinal numerals.

Now I will briefly revisit the theoretical questions which are the focus of this article:

1. Why did the former dual suffix spread from nominal phrases with the cardinal numeral 2 into nominal phrases with cardinal numerals 3 and 4?
2. What is "special" in the semantics of the cardinal numerals? How does the semantics of the lower cardinal numerals (2, 3, 4) differ from the semantics of the higher cardinal numerals (5 and greater)?
3. What can the diachrony of the cardinal numerals in the Novgorod birch bark letters tell us about the evolution of numerals in natural languages?

The answer to the first question was confirmed by the results of my diachronic corpus study. The data have shown that the spread of the dual suffix was triggered by the loss of dual number and was due to the dual/plural number syncretism. Since both the dual and the plural shared the [−atomic] number

feature, the dual suffix, originally used to mark nouns combining with the numeral 2, was repurposed in NPs modified by the numerals 3 and 4. In the new system, following the loss of the dual, the former dual suffix marked grammatical number, i.e., non-atomic elements, and the former "number" words for 3 and 4 became numerals supplying cardinality and counting non-atomic nouns.

The second question required a deeper look into the semantics of the cardinal numerals. I have shown that cardinal numerals are semantically ambiguous, which makes them, in this sense, "special". The lower cardinal numerals 1, 2, 3, 4, as well as the higher numerals 5 and greater, have predicative semantics at the semantic type <e, t> and can function as modifiers at the semantic type < e, t < e, t >> when they appear pre-nominally in combination with NPs. Bare cardinal numerals are of the semantic type <n>, which allows them to function as arguments in a sentence. The semantic ambiguity of the cardinal numerals makes it possible for us to understand why they can function syntactically as attributive adjectives as well as arguments.

Russian cardinal numerals form a cline from adjectival lower numerals (1, 2, 3, 4) to nominal (5 and greater). Historically, the lower numerals *odin* 'one', *dva/dve* 'two', *tri* 'three', and *četyre* 'four' behaved like adjectives in that they agreed in number, case, and gender with the noun they modified. The higher numerals *pjat'* 'five', *šest'* 'six', *sem'* 'seven', *osm'* 'eight', *devjat'* 'nine', *desjat'* 'ten', and greater were count nouns of the *i*-feminine declension type; they behaved like regular nouns in that they triggered genitive case on the noun in combination with noun phrases. The lexical split between the adjectival 1, 2, 3, 4 and nominal 5-and-greater cardinal numerals might be the result of Proto-Slavic inheriting the Proto-Indo-European quaternary system of counting (the first four fingers of the hand were more salient and different from the thumb; Winter 1992). The answer to the question about the lexical split of the cardinal numerals in Russian requires further inquiry and research.[12]

The diachrony of cardinal numerals in the Old Novgorod dialect has shown that the cognitive concepts of cardinality, individuality, and countability are inextricably connected. Since these cognitive notions are grammaticalized in language and represented by grammatical number and numerals, we would expect that a change in one of these categories would provoke a change in another category. The case of cardinal numerals in the Old Novgorod dialect has shown that a change in grammatical number (loss of the dual) led to the restructuring of countability and the rise of cardinal numerals.

[12] Ionin and Matushansky (2018: 162) note that Russian cardinal numerals are "neither fully nominal nor fully adjectival" and exhibit a more fine-grained behavior.

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Binding of Reflexives in Polish as Agree, Move, and Late Spell-Out

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Abstract: This paper considers components necessary for a successful account of A-binding relations in Polish, a language with subject-oriented reflexives and a binding domain delimited by the Tensed Sentence Condition. Following the presentation of major relevant data points in Polish, two comprehensive theories of binding—the Agree-based theory, presented in Reuland 2011, and the Move-based theory, presented in Boeckx et.al. 2008—are briefly outlined and applied to said data. It turns out that the two theories, in their most orthodox forms, fall short of achieving empirical adequacy. Subsequently, a positive theory of A-binding is proposed which combines upward Agree, movement (and copy pronunciation) of the bound element, similar to movement of clitic/weak pronoun in Polish, and a lexicalization algorithm modeled upon the proposals in Safir 2014 and Nikolaeva 2014. It is shown in a number of derivations with possessives how both the subject and the object engage in binding relations as antecedents and how their dependents become lexicalized as either reflexive or pronominal.

1. Introduction and Key Data Points

This paper considers components necessary for a successful account of Argument-binding relations in Polish, a language with subject-oriented binding respecting the Tensed Sentence Condition (TSC). It is of particular interest how A-binding data are captured by two major reductionist approaches to binding: binding as Agree (Reuland 2011) and binding as Move (Hornstein 2001; Boeckx et. al. 2008). These two theories grow out of and rely on empirical findings and theoretical achievements of the data-rich research in comparative linguistics since the 1980s and 1990s (Chomsky 1981, 1986; Manzini and Wexler 1987; Belletti and Rizzi 1988; Rappaport 1986; Burzio 1996; Hellan 1988; Progovac 1992, 1993; Avrutin 1994, etc.). It is shown below how the two theories, in their most orthodox forms, fall short of achieving empirical adequacy with respect to Polish data. A positive theory of A-binding is proposed which combines elements of both approaches plus a competition-based component (Nikolaeva 2014; Safir 2004, 2014).

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In Polish, binding is subject-oriented, and objects, either dative- or accusative-marked, cannot bind anaphors in other object or adjunct positions, as presented in (1–3):[1]

(1) Jan_1 opowiedział Marii_2 o $\text{sobie}_{1,*2}$/?niej_2 (samej)/*nim_1.
Jan_{NOM} told Maria_{DAT} about self her alone him
'Jan told Maria about himself/her.'[2]

(2) Jan_1 pokazał Marii_2 [$\text{swoje}_{1,*2}$/jej_2 /*jego_1 zdjęcie].
Jan_{NOM} showed Maria_{DAT} self her his picture_{ACC}
'Jan showed Maria his/her picture.'

(3) Piotr_1 pokazał Marii_2 węża [obok
Piotr_{NOM} showed Maria_{DAT} snake next.to
$\text{siebie}_{1,*2}$/niej_2/$\text{swojej}_{1,*2}$/jej_2 torby].
self her self's her bag
'Piotr showed to Maria a snake next to him/her/his bag/her bag.'

Both the reflexive pronoun and the reflexive possessive are oriented towards the nominative subject, while dative and accusative objects look like infelicitous binders in (1–3). Whatever the reason, it cannot be lack of (asymmetric) c-command between the objects. As shown in Witkoś et al. 2020 and Witkoś and Łęska 2020, variable binding shows that there is c-command between both objects, in line with their surface order and irrespective of their case marking.[3] This c-command relation can be illustrated with relations involving

[1] See Willim 1989, Reinders-Machowska 1991, or Rappaport 1986 for almost identical data in Russian.

[2] The following abbreviations are used: N = neuter; F = feminine; M = masculine; SG = singular; PL = plural; NOM = nominative; ACC = accusative; GEN = genitive; DAT = dative; LOC = locative; INF = infinitive; FIN = finite; PAST = past tense; PERF = perfective; PRT = preterite; PRTC = participle; COND = conditional; VIR = virile; REFL = reflexive; CL = clitic; CLF = classifier.

[3] The order of objects with Polish ditransitive verbs seems relatively free, although its core variant is mostly assumed to be DAT – ACC (Tajsner 2008; Wiland 2016; Citko 2011; but see Dornisch 1998 for an opposite view). I assume that whenever the accusative object precedes the dative one, it has been moved overtly to the edge of the vP phase. In her recent study of ditransitive verb phrases in Polish, Łęska (2020) identifies two major classes of such verbs, with the majority class (the *dawać* 'give'-type) showing the DAT – ACC underlying word order and the minority class (the *podporządkować* 'subject'-type) showing the ACC – DAT underlying word order. Both classes allow for the scrambling of objects and show the effects seen in (4–5), where the preceding object c-commands the following one.

pronominal variables (see (4–5)), commonly believed to require c-command by their QP antecedents:[4]

(4) Jan pokazał każdemu zawodnikowi$_1$ jego$_1$ nowego trenera.
Jan$_{NOM}$ showed every player$_{DAT}$ his new coach$_{ACC}$
'Jan showed every player his new coach.'

(5) Jan pokazał każdego trenera$_1$ jego$_1$ nowym zawodnikom.
Jan$_{NOM}$ showed every coach$_{ACC}$ his new players$_{DAT}$
'Jan showed every coach to his new players.'

Another confirmation of the relation of c-command holding between both objects comes from the binding of reciprocal pronouns; unlike reflexives, reciprocals allow for antecedents placed in the object position (Willim 1989; Reinders-Machowska 1991; Rappaport 1986 for Russian):[5]

[4] Obligatory c-command in this context is questioned by Barker (2012: 623–24), who lists a number of examples where the QP does not seem to c-command the pronominal variable, but the bound variable reading is available nevertheless:

(i) She [copied each$_i$ book] without hurting it$_i$.

(ii) The grade [that each$_i$ student receives] is recorded in his$_i$ file.

Although lack of c-command in variable binding reflects a minority view, the argument from reciprocal binding provided in this section confirms that one object c-commands the other in Polish ditransitive constructions.

[5] Upon closer inspection, it turns out that reciprocals substantially differ from reflexives in Polish; not only do they allow for object binders, but they cannot be bound across a closer potential antecedent, such as a nominal possessor in [Spec, NP] or the PRO subject of the infinitive. A non-local reciprocal interpretation is not available, though a non-local reflexive interpretation is:

(i) Pisarze$_1$ czytali wspomnienia o sobie$_1$.
writers$_{NOM}$ read reminiscences$_{ACC}$ about self$_{LOC}$
'Writers read reminiscences about each other.'

(ii) *Pisarze$_1$ czytali [wspomnienia Tołstoja o sobie$_1$].
writers$_{NOM}$ read reminiscences$_{ACC}$ Tolstoj$_{GEN}$ about self$_{LOC}$
(Intended: 'Writers read the reminiscences of Tolstoj about each other.')

(iii) My$_1$ kazaliśmy im$_2$ [PRO$_2$ nalać sobie$_{*1/2}$/jeden drugiemu$_{*1/2}$ herbaty].
we$_{NOM}$ asked them$_{DAT}$ pour$_{INF}$ self$_{DAT}$ each other$_{DAT}$ tea$_{ACC}$
'We asked them to pour each other tea.'

Certainly, the issue of the difference between the reflexive and the reciprocal interpretation of *siebie* 'self' and *swoje* 'self's' deserves further attention and analysis.

(6) Policjanci$_1$ wypytywali ich$_2$ o
policemen$_{NOM}$ questioned them$_{ACC}$ about
siebie$_{1,2}$/jednego o drugiego$_2$.
self$_{ACC}$ each$_{ACC}$ about other$_{ACC}$
'The policemen$_i$ questioned them$_j$ about each other$_{i/j}$.'

(7) Chłopcy$_1$ czytali dziewcząt$_2$ wspomnienia o sobie$_{*?1/2}$
boys read girls$_{GEN}$ memories about self
'The boys read the girls' memories about themselves/them.'

Example (8) shows that Polish allows for the binding of the reflexive pronoun by a remote antecedent, as long as they are in the same tensed sentence. Here both the root and the embedded clause subjects (*Maria* and PRO controlled by *Piotr*) are felicitous antecedents for the reflexive possessive. Interestingly, they can also both function as antecedents for pronominal possessives:

(8) Maria$_1$ kazała Piotrowi$_2$ [PRO$_2$ pozdrowić swoich$_{1,2}$ /jego$_2$ /jej$_1$
Maria$_{NOM}$ told Piotr$_{DAT}$ greet$_{INF}$ self's his her
przyjaciół].
friends
'Maria told Piotr to greet his/her friends.'

Next, Polish has dative experiencers (DAT OEs) with certain psych predicates, and these function as antecedents for anaphoric pronouns, (9a), unlike object datives. Rather surprisingly, they serve as antecedents to either pronominal or reflexive possessives, (9b):

(9) a. Marii$_1$ było żal siebie$_1$ /*?jej$_1$ (samej).
Maria$_{DAT}$ was$_{3SG.N}$ sorrow$_{3SG.M}$ self$_{GEN}$ *?her$_{GEN}$ alone
'Maria felt sorry for herself.'

b. Marii$_1$ było żal swojej$_1$ /jej$_1$ koleżanki.
Maria$_{DAT}$ was$_{3SG.N}$ sorrow self's$_{GEN}$ her$_{GEN}$ friend$_{GEN}$
'Maria felt sorry for her female friend.'

There is a split between psychological predicates with DAT OEs licensing the other argument in genitive (usually these are non-verbal predicates) and those licensing an argument in nominative (typically verbal predicates); see (9–10). The latter, such as the predicate *podobać się* 'appeal to', show a varied pattern: the possessive pronoun in the nominative argument is strongly pre-

ferred to the possessive reflexive, when bound, as in (10).[6] However, Witkoś (2008) shows that a preverbal DAT OE can be involved in anaphoric binding of an element bearing a case different from nominative but embedded in the nominative-marked constituent; see (11):

(10) Marii$_1$ spodobała się ?*swoja$_1$/jej$_1$ nowa książka.
Maria$_{DAT}$ liked REFL ?*self's her new book$_{NOM}$
'Maria liked her new book.'

(11) [Nowakom$_2$] spodobała się nowa książka (Kowalskich$_1$)
Nowaks$_{DAT}$ liked REFL new book$_{NOM}$ Kowalskis$_{GEN}$
o sobie$_{1,2}$.
about self
'The Nowaks liked the new book (by the Kowalskis) about themselves/them.'

In (9b) the DAT OE functions as antecedent for both reflexive and pronominal possessives which are indexically dependent on it. In terms of the classical Binding Theory of Chomsky (1981, 1986; Manzini and Wexler 1987), it "binds" both reflexive and pronominal possessives in the same syntactic domain. This is an obvious problem for the view that pronouns and reflexives remain in complementary distribution (Chomsky 1981, 1986).[7] The empirical picture emerging so far is as follows:

[6] Witkoś et al. (2020) credit this fact to an extended application of the Anaphor Agreement Effect (AAE) of Rizzi 1990:

(i) Anaphors do not occur in syntactic positions construed with agreement.

(ii) Practically, the AAE prevents anaphors from appearing in the subject position. The possessive reflexive in (10) shows the ϕ-features of the subject and constitutes its subpart.

[7] Moreover, Witkoś et al. (2020) show that the dependency between the pronominal possessor and the DAT OE is not accidental co-reference, as this option is also available in equivalent examples with QPs as antecedents:

(i) Każdemu studentowi$_1$ było żal siebie$_1$/*?jego$_1$ (samego).
every student$_{DAT}$ was$_{3SG.N}$ sorrow self *?him alone
'Every student felt sorry for himself.'

(ii) Każdemu studentowi$_1$ było żal swojej$_1$/jej$_1$ koleżanki.
every student$_{DAT}$ was$_{3SG.N}$ sorrow self's her friend$_{GEN}$
'Every student felt sorry for his female friend.'

The sloppy identity reading is available with both the reflexive and pronominal possessives.

(12) Anaphoric binding in Polish:

a. The nominative subject acts as antecedent for reflexive pronouns and reflexive possessives.

b. The object (dative or accusative) does not act as antecedent for a reflexive pronoun/reflexive possessive in the other object or adjunct.

c. The object (dative or accusative) acts as antecedent for a pronominal possessive in the other object NP.

d. The DAT OE acts as antecedent for (i) reflexive pronouns, (ii) reflexive possessives, and (iii) pronominal possessives.

e. The DAT OE marginally acts as an antecedent for reflexive possessives embedded in nominative constituents.

The biggest difference between the characteristics in (12) and binding data in English, apart from the lack of a dedicated morphological form for the reflexive possessive, comes in the binding capacity of the object, which functions as antecedent to reflexives in ditransitive constructions:

(13) John_1 showed Mary_2 herself_2/himself_1 in the mirror.

(14) John_1 showed Mary_2 to herself_2/himself_1 in the mirror.

(15) John_1 showed Mary_2 to her_2 friend/his_1 friend in the mirror.

A comparison of (1–4) and (8–11) on the one hand and (13–14) on the other, in terms of both the morphological composition and interpretation of "bound" elements, confirms an observation made in Safir 2004, 2014. Safir claims that the classical Binding Theory collapsed two related but not isomorphic phenomena: the dependent identity relations relevant for the LF interpretation and the lexicalization of the dependent identity relation on the dependent element, relevant at the PF interface. For instance, in (1) above, the c-commanding object functions as an antecedent for a possessive element in a local domain (it binds it in the LF-relevant sense), but the possessive is lexicalized as pronominal, despite being both indexically dependent on the superior object and c-commanded by it. In (9–10) above, the DAT OE functions as antecedent for possessives. These possessives are lexicalized either as reflexive or pronominal. However, the nominative antecedent in (2) is associated only with the reflexive possessive. It appears that the domain of the Polish clause is divided into three sections with respect to the placement of antecedents for possessives: the antecedent placed in the high domain ([Spec, TP]) binds only reflexive possessives, the nominal placed in the low VP-internal position functions as antecedent for pronominal possessives only, and the nominal placed in the

medial position ([Spec, vP]) can function as antecedent for both reflexive and pronominal possessives.[8]

A successful account of binding in Polish needs to capture the subject orientation of reflexives and the intriguing status of the DAT OE as antecedent. These examples are treated as a litmus test for the two major approaches to binding, one based on Agree and the other on Move.[9]

[8] A reviewer for *JSL* observes that experiencers could also be placed in the specifier position of the Applicative Phrase, as proposed in Cuervo 2003, rather than in [Spec, vP]. I subscribe to this point in the general sense, but I decided against introducing ApplPs into the paper for reasons of space and clarity. Furthermore, this would also add further complexity to the analysis. The general point my analysis is meant to capture is that in Polish, DAT experiencers occupy a higher structural position than other DAT-marked arguments (goals and benefactives), which remain VP-internal. I therefore follow Woolford (2006) and Nikolaeva (2014), who propose that DAT experiencers are licensed in [Spec, vP]. Cuervo's approach to dative constructions based on ApplP achieves a similar result and is more detailed, but Cuervo also introduces another Appl head licensing lower DAT arguments. In this way, the structure of ditransitive and monotransitive clauses would be quite distinct, while I aim at providing a more general picture here.

[9] Two caveats must be made before I proceed further. (a) The construction involving the expression *swoje miejsce* 'its/their place' may produce the illusion that the object can serve as an antecedent in reflexive binding in Polish:

(i) Jan$_1$ odłożył książki$_2$ na swoje$_{1/2}$ miejsce.
Jan$_{NOM}$ put.back books$_{ACC}$ on self's place
'Jan put the books back in their place.'

However, this construction is to be treated as a fixed/idiomatic expression that shows very little productivity, if any:

(ii) Jan$_1$ odłożył książkę$_2$ do swojej$_{1/*?2}$ szuflady.
Jan$_{NOM}$ put.back book$_{ACC}$ in self's drawer
'Jan put the book back in his drawer.'

(iii) Jan$_1$ odwiózł Marię$_2$ do swojego$_{1/*2}$ mieszkania.
Jan$_{NOM}$ brought.back Maria$_{ACC}$ to self's flat
'Jan brought Maria back to his flat.'

(b) I also abstract away from the adjectival non-reflexive use of *swój* 'self's' meaning 'well-known, familiar', which does not require any lexical antecedent, see (v) below:

(iv) Jan to swój człowiek.
Jan$_{NOM}$ is familiar person
'Jan is one of our own.'

(v) Swój człowiek przewiózł pieniądze przez granicę.
self's man brought money$_{ACC}$ across border
'One of our own brought the money across the border.'

2. Binding as Agree

The most prominent proposal that anaphoric binding relies on Agree is presented in Reuland 2011, building on Reinhart 1983 and Reinhart and Reuland 1993. The driving force of this analysis is the postulate that index-based binding should be dispensed with as non-minimalist in nature. In its place, a more parsimonious procedure is proposed that observes the Inclusiveness Condition and exploits three basic operations of minimalist grammar: Merge (both external and internal), Match (conceived of as feature checking or Agree), and Delete (confined by the recoverability condition). So the gist of the analysis presented in Reinhart and Reuland 1993 is preserved but re-modeled to accommodate minimalist assumptions. The first one is that indices can be replaced with copies, not only in the obvious case of movement but also in the case of A-chains.

Reuland (2011) conducts a meticulous analysis of feature composition and feature deletion and proposes that feature checking and deletion (valuation) is instrumental in the binding of reflexive pronouns, seen as the sharing of the same ϕ-features between the antecedent DP and the reflexive pronoun. He postulates that feature checking and deletion (valuation) under Agree implies that the features deleted on the goal are recoverable from the antecedent via a combined chain dependency whose general outline is represented below (Reuland 2011: 146):

(16) DP….T….V….SE
R1 R2 R3

Anaphoric binding follows from a conspiracy of independent syntactic processes: R1 stands for subject-verb agreement, R2 stands for the verb-tense dependency, and R3 for a structural case dependency. Once these dependencies are combined, binding (envisaged as sharing of the same ϕ-features) holds between DP and SE. General principles of derivational and representational economy favor reflexives over pronouns:

(17) Bound Variable (BV) Rule (Reuland 2011: 156)

NP A cannot be A-bound by NP B if replacing A with C, C an NP such that B heads an A-chain tailed by C, yields an indistinguishable logical syntax representation.

Reuland discusses in detail the process of binding the Dutch SE reflexive (*zich* 'self') where anaphoric binding piggy-backs on Agree for ϕ-features. He proposes two technical applications of this idea, one based on Chomsky 1995

and feature movement and the other on Pesetsky and Torrego's (2007) feature-sharing approach (Reuland 2011: 149–51):

(18) a. Oscar voelde zich wegglijden.
Oscar$_{NOM}$ felt self$_{ACC}$ slide.away$_{INF}$
'Oscar felt himself slide away.'

b. *Oscar voelde hem wegglijden.
Oscar$_{NOM}$ felt him$_{ACC}$ slide.away$_{INF}$

Let me present an outline of the latter execution of the core proposal. Reuland follows the postulate of feature sharing between constituents. In a nutshell: SE in the object position gets the value for its ϕ-features from the subject because it becomes involved in an interlocking chain of Agree relations, where the subject DP values the ϕ-features of T, which is involved in Agree with v, which, in turn, is involved in Agree with the SE object. The derivation starts with the following structure:

(19) $[_{T'}\ T_{[uT][u\phi]}\ [_{vP}\ DP_{S\ [uT][v\phi]}\ [_{v'}\ v_{[vT][u\phi]}\ [_{VP}\ V\ SE_{[u\phi]}]]]]$

Tense, the subject, and v are involved in an Agree relation for (nominative) case ([uT] in Pesetsky and Torrego's terminology), with the interpretable instance of the [T] feature introduced by T and the valued instance provided by V. The sharing of ϕ-features between the three elements is a consequence of the sharing of the [T] feature. So far, the SE object remains out of the frame, as T does not become involved with it in any direct manner. The crucial derivational step, which, according to Reuland, brings the SE object into the picture, is its raising to [Spec, vP], driven by the EPP property of v, which places it above the subject in the position of the outer specifier:

(20) $[_{T'}\ T_{[uT][u\phi]}\ [_{vP}\ SE_{[u\phi]}\ [_{v'}\ DP_{S\ [uT][v\phi]}\ [_{v'}\ v_{[vT][u\phi]}\ [_{VP}\ V\ <SE_{[u\phi]}>]]]]]$

But clearly, for this movement to be feasible, the object must necessarily bear a structural case. When T probes for the ϕ-features of the subject, it first encounters [uϕ] features of SE and looks past them to [vϕ] features of DP_S. But as a result, the [vϕ] features on DP_S provide a value to all the members of the ϕ-feature-sharing chain, including v. Thus, the ϕ-features of the DP_S and the SE objects are shared, which is sufficient to establish the binding relation. Reuland's Agree-based theory of anaphoric binding feeds on movement; the movement of the object is an indispensable component of the Agree-based theory. Yet, this is also a limitation of this account: the procedure presented above makes a clear prediction that the SE anaphor must bear structural case licensed by v. If the object were marked for a different case, it would not move

to [Spec, v]. But if it did not move, it would not become a member of the extended chain within which ϕ-features are shared.[10]

Reuland's index-free proposal for binding is based chiefly on Agree and feature sharing, and it is attractive on conceptual grounds.[11] Yet it is quite programmatic, as the author admits himself.[12] This index-free program for binding theory requires further meticulous application to the range of constructions we are concerned with. Specifically, (a) it straightforwardly covers only constructions in which both the binder and the bindee bear structural cases, (b) it does not easily extend to applications where either the binder or the bindee bear inherent/quirky cases, and (c) it typically places the binder in the subject position of [Spec, TP], with little discussion of cases where it occurs elsewhere.

Furthermore, Safir (2014: 111–12) provides an empirical argument against the correlation between A-binding and subject-verb agreement. This is evident in cases where the verb (T) agrees with a nominative object, while its subconstituent is bound by a dative antecedent:

[10] In fact, Reuland (2011) indicates that it is case that distinguishes between Dutch SE and Frisian. Instead of the expected SE, Frisian uses a plain dative pronoun here:

(i) Willem_1 skammet $\text{him}(^{??}\text{sels})_1$.
William_{NOM} shames him_{DAT}
'William is ashamed of himself.'

Reuland sees (i) as confirmation of the idea that ϕ-feature sharing, involved in structural case marking via Agree, is a key vehicle for reflexivization. There is neither structural case, nor ϕ-feature sharing, nor a reflexive pronoun in Frisian (i). This account of Frisian is critically reviewed in Rooryck and Vanden Wyngaerd 2011. A critical review of Reuland 2011 is presented in Antonenko 2012.

[11] Reuland also touches upon the question of reflexive possessives. Relying on the articulated structure of the nominal phrase in Longobardi 2001, he observes that there is a correlation between the licensing of reflexive possessives and phase-edge phenomena caused by the DP phase. He assumes that the DP phase boundary disallows the placement of reflexive possessives in the complement position to D. Yet reflexive possessives can appear at the edge of DP as a result of movement. Despić (2015) observes that not only NP-languages have reflexive possessives, but also DP-languages in which the determiner postmodifies the lexical noun (e.g., Norwegian and Danish). He proposes that, in these languages, the head D bears an Edge Feature (EF), forcing the possessor to move to the phase-edge position, in line with the analysis in Delsing 1993.

[12] Reuland (2011: 146): "Recall that my main goal is to show that syntactic encoding of interpretive dependencies obeying the inclusiveness condition is in principle possible. I will therefore limit discussion as much as possible to environments and subcases needed for this goal."

(21) a. Henni þykir bróðr sinn / *hennar leiðinlegar.
she$_{DAT}$ thinks brother$_{NOM}$ self's her boring
'She finds her brother boring.'

b. Konunginum voru gefnar ambáttir í höll sinni / ?hans.
king.the$_{DAT}$ were given slaves$_{NOM}$ in palace self's his
'The king was given slaves in his palace.'

In this Icelandic example, the possessive reflexive *sinn* 'self's' is bound by the dative subject, which does not agree with the verb. If subject-verb agreement is a morphological reflection of Agree between T (and V) and the nominative DP, then this cannot be the same relation as A-binding, as this would exclude A-binders non-agreeing with the verb. Dative antecedents for reflexives would be fairly unexpected, contrary to fact with respect to the Icelandic data in (21) and Polish DAT OEs in (9–11).

These reservations notwithstanding, developing applications of Reuland's index-free minimalist theory of binding to the constructions mentioned in §1 is an intriguing and challenging research task, worth pursuing independently of the current study. In this context, Zubkov (2018) proposes an application of Reuland's (2011) proposal to anaphoric binding in Russian. His study develops the general idea that anaphoric binding stems from Agree for ϕ-features and acknowledges the feature-valuation mechanism from Pesetsky and Torrego 2007. Right at the outset, Zubkov rejects the idea that structural case, or any other case for that matter, is implicated in ϕ-feature agreement (so the role of the condition on A-chains is minimized). Agree for ϕ-features is triggered by a functional head (one or more) placed above the domain of the clause where argument structure is articulated, so probably above vP. This functional head drives Agree and valuation of ϕ-features for number and/or person, although both features can be probed for separately by separate probes. Sharing [+number] features only is typical of non-nominative antecedents. The probe that carries both [+number] and [+person] features overpowers the one that carries only the [+number] feature. The [+person] feature is valued on the relevant probe (Zubkov's equivalent to T) by the goal that carries nominative case. The placement of the ϕ-probe above the argument domain of the clause, plus the idea that Agree is in principle multiple (Landau 2000; Hiraiwa 2001; Pesetsky and Torrego 2007; Reuland 2011), straightforwardly predicts subject orientation. The probe shares its values with the closest DP in its c-command domain. The ϕ-features of this DP are then shared via a feature-sharing mechanism, with reflexives embedded further down in the c-command domain of the probe:

(22) a. $T_{[-\text{val person, }-\text{val number}]}\ldots>\ldots DP_{1[+\text{val person, }+\text{val number}]}\ \ldots,\ \ldots DP_{2[-\text{val person, }-\text{val number}]}$

b. $Pr_{[-\text{val number}]}\ldots>\ldots DP_{1[+\text{val person, }+\text{val number}]}\ \ldots,\ \ldots DP_{2[-\text{val person, }-\text{val number}]}$

The probes T and Pr(obe) have their features valued by DP_1 (the privileged argument) and spread them down their c-domain to DP_2. DP_1 need not c-command DP_2. Intervention effects in Agree for ϕ-features are caused by intervening probes, not potential goals, as probing is in principle multiple. Non-privileged arguments (i.e., either object of a ditransitive predicate) never get to bind the NPs they c-command. This effect results from the assumption that there is only one ϕ-feature probe per argument domain and this probe is placed immediately above this domain, earmarking the highest argument (the subject) as the only privileged argument.

Zubkov's proposal solves the problem that Reinhart and Reuland 1993 and Reuland 2011 faced in the form of the correlation between structural case and binding or ϕ-feature sharing.[13] Once the two procedures get separated, the antecedent need not be nominative and the reflexive need not appear in the position where accusative is licensed. Either can be dative, genitive, or any other case. At the same time, it raises the question of how this mechanism applies to languages in which subject orientation does not hold and the superior object becomes privileged (the English case of examples (13–15)).[14]

Another approach where Agree (combined with Move) figures prominently and is divorced from case valuation is presented in Rooryck and Vanden Wyngaerd 2011. These authors analyze reflexive constructions in Dutch in great detail and against the backdrop of reflexives in other languages. Key components of their analysis involve a direct relation of Agree holding between the reflexive and its antecedent (without any mediating role of T), syntactic movement, and Late Spell-Out regulated by principles of Distributed Morphology (Halle 1997). They propose distinct derivations for the simple reflexive *zich* 'self' and the complex one *zichzelf* 'himself', but in both derivations, the reflexive element functions as probe, with unvalued ϕ-features (person, number, and gender), and at a certain derivational step, it c-commands its antecedent as goal and has its ϕ-features valued. Rooryck and Vanden Wyngaerd take the reflexive *zich* 'self' to be merged as a component of a larger

[13] Another interesting account of binding in Russian based on Agree in the context of feature sharing (Pesetsky and Torrego 2007) is presented in Antonenko 2012, where the reflexive interpretation is obtained via a combination of Agree for ϕ-features and a ϱ (rho) feature, present on selected heads (T, v, V) and responsible for establishing coreference between the anaphor and its antecedent within the domain of a particular head. The limits of this contribution do not allow me to discuss Antonenko's account in detail.

[14] The virtue of Reuland's original proposal lies in the minimalist and fundamentalist parsimony of the system: no features tailor-made to address A-binding are put to work. Yet, paradoxically, without being called the "binding" feature, Zubkov's multiple Agree for non-case-related ϕ-feature seems to be doing exclusively and only that. So it shares more with Hicks 2009, Rooryck and Vanden Wyngaerd 2011, and Antonenko 2012 than an avid adherent to Reuland's (2011) approach would have desired.

constituent, corresponding to den Dikken's (2006) analysis of possessive constructions involving the Relator Phrase (RP):

(23) a. Milo heeft zich bezeerd.
Milo has REFL hurt
'Milo has hurt himself.'

b. [bezeren [$_{RP}$ [$_{DP_1}$ zich$_{POSSESSUM}$] [R [$_{DP_2}$ Milo$_{POSSESSOR}$]]]]

The VP has unaccusative syntax. The reflexive c-commands its antecedent at an early stage of the derivation and has its ϕ-features valued by the relevant features of the antecedent:

(24) a. [$_{VP}$ V [$_{RP}$ [$_{DP_1}$ {P:_, N:_, G:_}] R [$_{DP_2}$ {P:3, N:sg, G:m}]]]
bezeer zich Milo

b. [$_{VP}$ V [$_{RP}$ [$_{DP_1}$ {P:3*, N:sg*, G:m*}] R [$_{DP_2}$ {P:3, N:sg, G:m}]]]
bezeer zich Milo

The valued feature is marked (here, with an asterisk), and this marking is relevant for Spell-Out. Thanks to the asterisk, lexical insertion rules distinguish between features valued during the derivation and features assigned in the Lexicon. The former lead to the spell-out (lexical insertion) of the form *zich* 'self', while the latter lead to the spell-out of an equivalent pronoun. At a later stage of the derivation of (23–24), the antecedent DP moves out of the RP phrase to its case position and functions as the subject. Rooryck and Vanden Wyngaerd extend this account to constructions with reflexive possessives in other languages, assuming that the possessive (and the specifier in general) should be treated as an adjunct, in line with Kayne 1994. Thus, a reflexive in this position c-commands outside the DP it is a specifier of and values its features against those of the antecedent.

(25) a. Jan bezeert zich / zijn voet.
Jan hurts REFL his foot
'Jan hurts himself/his foot.'

b. … T [$_{VP}$ bezeer [$_{RP}$ [$_{DP}$ zich/zijn voet] R [$_{DP}$ Jan]]]]

These derivations beg at least two questions in the context of the Polish data. First, it is not clear how to account for subject orientation of Polish reflexives, as the movement of the antecedent out of RP should obey regular locality conditions, and in constructions with ditransitive verbs, it is predicted to target the position of the object (leading to the object orientation of the reflexive) rather

than the more remote position of the subject.[15] Second, the movement of the antecedent becomes even more challenging in constructions with long-distance binding, as in (8), where the issue of the locality conditions comes to the fore (for instance, in order to become the subject of the main clause, the antecedent should move across both the object-controlled PRO and the object itself).

As for the complex reflexive *zichzelf* 'himself', Rooryck and Vanden Wyngaerd propose to treat it like an intensifier or floating quantifier, having established their common distribution pattern. Crucially, these elements are adjoined to vP. The complex reflexive is first merged in the object position (complement to V in (26b)) and then moved to a vP-adjoined position in (26c), from which it c-commands the subject (its typical antecedent). Next, the ϕ-features of the reflexive are valued against the subject under Agree in (26d):

(26) a. Pete invited himself.

b. $[_{vP}\ [_{DP_1}$ {P:3, N:sg, G:m}$]\ [_{VP}\ V\ [_{DP_2}$ {P:_, N:_, G:_}$]]]$
Pete invited himself

c. $[_{vP}\ [_{DP_2}$ {P:_, N:_, G:_}$]\ [_{vP}\ [_{DP_1}$ {P:3, N:sg, G:m}$]\ [_{VP}\ V\ [_{\text{~~DP}_2\text{~~}}$ ~~{P:_, N:_, G:_}~~$]]]$
himself invited Pete

d. $[_{vP}\ [_{DP_2}$ {P:3*, N:sg*, G:m*}$]\ [_{vP}\ [_{DP_1}$ {P:3, N:sg, G:m}$]\ [_{VP}\ V\ [_{\text{~~DP}_2\text{~~}}$ ~~{P:_, N:_, G:_}~~$]]]$
himself invited Pete

Subsequently, the subject is raised to [Spec, TP]. Although the raising of the complex reflexive to the vP-adjoined position is an all-important element of their analysis, Rooryck and Vanden Wyngaerd do not define its nature and causes precisely (see Rooryck and Vanden Wyngaerd 2011: ch. 3, note 14).[16] An application of the derivation of constructions with the complex reflexive to Polish data above also raises the question of subject orientation; if the binding of the complex reflexive is similar to the properties and distribution of floated quantifiers or intensifiers, then Polish has intensifiers and floated quantifiers modifying the subject in (27a), the accusative object in (27b), and the dative object in (27c), as evidenced by case concord:[17]

[15] Rooryck and Vanden Wyngaerd's approach shares this property with Kayne 2002 and Zwart 2002, approaches in which the antecedent and the reflexive initially form a constituent from which the antecedent moves.

[16] They also admit that, depending on the nature of one's views on object shift in English, the movement of the complex reflexive to the vP-adjoined position could be either overt or covert, with no consequences for their account.

[17] These examples are modeled on the examples in Rooryck and Vanden Wyngaerd 2011 (esp. ch. 3).

(27) a. Chłopcy by wszyscy poszli na mecz.
boys$_{NOM}$ would all$_{NOM}$ go$_{PRT}$ to match
'The boys would all go to the match.'

b. Jan zaprosił nas wtedy wszystkich.
Jan$_{NOM}$ invited us$_{ACC}$ then all$_{ACC}$
'Jan invited all of us then.'

c. Maria pomogła nam wtedy wszystkim.
Maria$_{NOM}$ helped us$_{DAT}$ then all$_{DAT}$
'Maria helped all of us then.'

Yet, certainly, the latter two do not bind reflexives in Polish, so probably these phenomena need to be kept distinct.[18] Still, it must be duly noted that the approach developed in Rooryck and Vanden Wyngaerd 2011 has an unquestionable advantage in comparison to Reuland's (2011) analysis: in no way is the relation of ϕ-feature sharing between the antecedent and the reflexive conditioned by the licensing of structural case. The relations of binding and case valuation are kept distinct.

3. Binding as Move

The idea that syntactic movement is implicated in the A-binding relation has been developed by a number of authors, most notably Chomsky (1986), Chomsky and Lasnik (1993), Pica (1991), Huang (1983), Hestvik (1992), Avrutin (1994), Kayne (2002), Zwart (2002), Safir (2004), Hornstein (2001), and Boeckx et. al. (2008).[19] The Movement Theory of Reflexivization (MTR) is formulated in Boeckx et al. 2008 and is akin to Hornstein's (2001, 2003) and Hornstein and

[18] Rooryck and Vanden Wyngaerd (2011: ch. 4) note that while the two strategies of reflexivization they have outlined are universal (one based on the RP containing the simple reflexive *zich* 'self' and the other based on independent movement of the complex reflexive *zichzelf* 'himself' to the edge of vP), particular grammars can use them in distinct ways. So, for instance, the clitic reflexive *se* 'self' in French can also participate in a derivation suitable for the Dutch *zichself* 'himself'.

[19] I focus on the latest and most detailed analysis in Boeckx et. al. 2008, but earlier clues implicating movement in binding appear in Chomsky 1986 (esp. pp. 174–75), where the following two examples are considered:

(i) they told us that [[pictures of each other] would be on sale]
(ii) they told us about each other (themselves)

Chomsky proposes to capture the configuration in which the subject is the binder via movement:

(iii) they α_i-INFL [$_{VP}$ tell us about e_i]

Polinsky's (2010) Movement Theory of Control (MTC). On the basis of data from San Lucas Quiavini Zapotec and Hmong, the authors show that certain languages may spell out copies of the binders (antecedents) in the position of the bindees (anaphors):[20]

(28) B-gwa Gye'eihlly Gye'eihlly (Zapotec)
shave$_{PERF}$ Mike Mike
'Mike shaved himself.'

(29) Pov yeej qhuas Pov. (Hmong)
Pao always praise Pao
'Pao always praises himself.'

MTR accounts for the facts of Zapotec, Hmong, and English in the following manner: the antecedent is first merged in the position of the reflexive, and then it (or its sub-constituent) moves to another thematic position and onward to another case position. Ultimately, a chain of copies is formed:

(30) a. John likes himself.
b. [$_{TP}$ John [$_{T'}$ T [$_{vP}$ John v [$_{VP}$ likes John-self]]]]
c. John λx [x likes x]

Languages differ as to how the copies spell out. In English the lexical element *–self* fulfills an important function: it is able to absorb case, licensed in the position of the object. It is also a clitic, so it requires lexical support, which is provided through the insertion of *him-* . Zapotec and Hmong allow for a derivation of reflexive constructions in which their equivalent to *–self*, able to receive and bear case, is a null morpheme. A superficial scrutiny of example

[20] The examples in (28–29) involve bound dependent forms, functioning like reflexives in English, which is evident from sloppy identity readings in the context of ellipsis:

(i) Pov yeej qhuas Pov; Maiv los kuj ua le hab. (Hmong)
Pao always praise Pao May TOP also do as too
'Pao always praises himself and so does May.'

This example can only mean that May also praises himself, rather than him (that is, Pao).

At the same time, these languages also have a more "regular" version of the reflexive construction, in which a pronoun appears with a reflexive marker:

(ii) Pov yeej qhuas nwg tug kheej. (Hmong)
Pao always praise 3SG CLF self
'Pao always praises himself.'

(30b) reveals three copies of *John*, but only one of these is pronounced. This is because elements are typically pronounced in positions where they show case; the top copy is pronounced where nominative is licensed, and *(him)self* is pronounced at the bottom, where objective is licensed. No case is licensed in the middle position. Pronunciation of copies is ruled by Kayne's (1994) Linear Correspondence Axiom (LCA), with further refinements proposed in Nunes 1995. In principle, only one copy per chain should be pronounced and linearized. However, when copies in the chain are rendered invisible to the LCA, more than one copy can appear. Nunes shows that copies become invisible to the LCA if they are incorporated (morphologically fused) with word-like categories, on the assumption that the LCA cannot access word-internal material. Boeckx et al. (2008) assume that in Zapotec and Hmong, multiple copies are visible precisely because they are morphologically fused with a silent X^0-level category. The silent X^0-level category in (28–29) plays a dual role: it absorbs objective case and screens the copy from the LCA, thus allowing for its pronunciation.[21]

Yet Hornstein's MTR appears to face a number of challenges in Polish. One concerns subject orientation, shared with subject control in (32), i.e., indifference to the presence of the superior and c-commanding object, which should violate minimality conditions on movement:

(31) a. Maria$_1$ pokazała Janowi$_2$ w lustrze siebie$_{1,*2}$ /swoje$_{1,*2}$
Maria$_{NOM}$ showed Jan$_{DAT}$ in mirror self self's
odbicie.
reflection$_{ACC}$
'Maria showed to Jan herself/her reflection in the mirror.'

b. Maria$_1$ pokazała Jana$_2$ w lustrze sobie$_{1,*2}$/swojemu$_{1,*2}$
Maria$_{NOM}$ showed Jan$_{ACC}$ in mirror self self's
bratu.
brother$_{DAT}$
'Maria showed Jan to herself/her brother in the mirror.'

[21] This is their account of wh-copy constructions in some German dialects, analyzed in McDaniel 1986:

(i) Wen glaubt Hans wen Jakob gesehen hat?
who$_{ACC}$ thinks Hans$_{NOM}$ who$_{ACC}$ Jakob$_{NOM}$ seen has
'Who does Hans think Jakob saw?'

(ii) *Wessen Buch glaubst du wessen Buch Hans liest?
whose book think you$_{NOM}$ whose book Hans$_{NOM}$ reads
(Intended: 'Whose book do you think Hans is reading?')

This strategy has a limitation: absorption and blending within X^0 works best for elements with little structure, preferably only heads.

(32) $Maria_1$ obiecała $Janowi_2$ [PRO_1 wyprowadzić psa].
$Maria_{NOM}$ promised Jan_{DAT} $walk_{INF}$ dog_{ACC}
'Maria promised John to walk the dog.'

One way of accounting for subject orientation is to apply the treatment of *promise*-type verbs sketched in Hornstein and Polinsky 2010, where the intervener is placed in a silent PP. This strategy raises at least three questions. The first is how consistent this PP encapsulation is, because some datives—DAT OEs in (9–11)—are not encapsulated within the PP, since they function as binders for reflexives and movement should target only c-commanding positions (unless sideward movement is applied in this case; but if so, it could be applied in (31a) as well). The second question concerns case; neither dative nor accusative objects can bind a reflexive embedded in the other object. It would be quite idiosyncratic to propose a PP-"wrapping" for an object with structural accusative in (31b), because it shifts to genitive under clausal negation, a tell-tale property of structural accusative. Third, a somewhat less radical conclusion on c-command from within PPs is drawn in Yadroff and Franks 2001, where the so-called "functional" PPs are in the c-domain of their NP-complements:

(33) *$Maria_1$ mówiła do $niego_2$ o $Tomku_2$.
$Maria_{NOM}$ spoke to him_{GEN} about $Tomek_{LOC}$
(Intended: '$Maria_1$ spoke to him_2 about $Tomek_2$.')

The example above is ruled out as a Condition C violation, so using the PP-encapsulation as a strategy for putting the object out of harm's way does not seem effective.[22] Furthermore, as stressed already in Willim 1982, the analogy between binding and control in Polish cannot be pushed too far, as while reflexives are subject-oriented, obligatory control appears in both versions: object and subject control. Chomsky and Lasnik (1993: 556) capitalize on Willim's observation and illustrate it with Polish data:

(34) Jan_i opowiadał $Marii_j$ o $swoim_{i/*j}$ ojcu.
$John_{NOM}$ was.telling $Mary_{DAT}$ about self's $father_{LOC}$
'John was telling Mary about his/*her father.'

[22] Bruening (2014) proposes that the notions relevant for binding are linear precedence and phase-command, where the first phase projection confines the c-domain of the binder. He takes the PP not to constitute the phase, so the complement of P freely c-commands outside PP.

(35) Jan_i kazał Marii_j [PRO_j napisać artykuł].
John_{NOM} told Mary_{DAT} write article_{ACC}
'John told Mary to write an article.'

As (34) shows, anaphoric binding in Polish is subject-oriented, while obligatory control in (35) is not, and the object makes a perfect controller. Moreover, while controllers are designated by control predicates (see (36)), binders are not, and either argument can function as antecedent in an English-type language:

(36) a. John_j told Mary_i [PRO_i to leave].
b. *John_j told Mary_i [PRO_j to leave].

(37) a. John_j told Mary_i about herself_i.
b. John_j told Mary_i about himself_j.

In conclusion, binding and control must be kept apart, although they share quite a few similarities. This observation implies that they may not be reducible to each other, even given latest theoretical advances.

But what needs to be perceived as particularly challenging to the MTR is the issue of the spell-out of the copy of the antecedent; how do we account for the fact that a DAT OE can have its copy spelled out as either a reflexive possessive or a pronominal possessive with identical interpretations? And why must it be spelled out only as the reflexive pronoun when it is a co-argument of the DAT OE, as in (38) below:

(38) a. Marii_1 żal było siebie_1 / *?jej_1 (samej).
Maria_{DAT} sorrow $\text{was}_{3SG.N}$ self *?her alone_{GEN}
'Maria felt sorry for herself.'
b. Marii_1 żal było swojej_1 /jej_1 koleżanki.
Maria_{DAT} sorrow $\text{was}_{3SG.N}$ self's her friend_{GEN}
'Maria felt sorry for her female friend.'

The impression one gets from getting acquainted with Hornstein's (2001) analysis of binding is that in the English-type language, the pronoun coindexed with its antecedent spells out a non-movement or resumptive relationship, for instance, when the dependent element is embedded in an island. This is certainly not the case for the dependents of the DAT OE considered here.[23]

[23] The same issue appears in the case of long-distance reflexivization in (8).

Another movement-based proposal is formulated in Franks 2021. A-binding follows two broadly defined UG-given strategies, exemplified in such languages as English and Polish and other members of the Slavic family. Franks assumes the following two general structures for reflexive phrases:

(39) a. $[_{DP_1}\ [_{D_1}$ him] $[_{ReflP}\ [_{Refl}$ self] $[_{DP_2}$ the man]]]
b. $[_{DP}\ [_{ReflP}$ siebie/sebja/sebe]]

Franks proposes to implement the process of reflexivization through either moving the head Refl (the Slavic option) or the associate DP of this head (the English option). The Slavic option leads to the formation of a reflexive predicate, as in Reinhart and Reuland 1993, while the English option establishes a relation of two coreferential arguments. The key element of the analysis is the reflexive element Refl, treated as a syntactic head and projecting its own phrase embedded within a larger nominal constituent (DP).

The reflexivization strategy employed in English operates in a way similar to Hornstein's proposal:

(40) $[_{XP}$ [the man]… $[_{DP_1}\ [_{D_1}$ him] $[_{ReflP}\ [_{Refl}$ self] $[_{DP_2}$ ~~the man~~]]]]

English Refl has a DP_2 complement, which becomes its future antecedent. The derivation of the English reflexive construction involves movement: DP_2 moves to other thematic and case positions, transiting through the edge of DP_1 to agree with Refl for ϕ-features and leaving *him* as a marker of this agreement. *Him* also receives objective case from v. Subsequently, DP_2 moves on to other thematic positions, such as object or subject, c-commanding its source position. Finally, it reaches a position where it has its case valued. This procedure results in forming a pair of coreferential arguments:

(41) $[_{DP_2}$ the man] … > … $[_{DP_1}\ [_{D_1}$ him] $[_{ReflP}\ [_{Refl}$ self] *t*]]

DP_2 can terminate its A-movement in the position of the other object as well as the subject, depending on other factors involved in the derivation, such as the choice of the verbal predicate and its subcategorization properties. Significantly, such a derivation of the reflexive construction does not provide for subject-oriented binding to be expected.

In most Slavic languages, the head Refl has no DP complement (Bulgarian and Macedonian are special cases discussed separately). Franks submits that it pursues the other available reflexivization strategy and moves by itself, adjoining to v (and with it to T), and ultimately gives rise to a subject-oriented reflexive predicate. Further movement of Refl, together with v or independently, leads to long-distance binding effects:

(42) Magda [$_{vP}$ ~~siebie~~+zobaczyła [$_{VP}$ ~~zobaczyła~~ [$_{DP}$ siebie [$_{Refl(P)}$ ~~siebie~~]]]]
Magda self saw saw self self
'Magda saw herself.'

The content of ReflP (*siebie*) moves to D, as expected within nominal phrases, and then to v. The verb moves from V to v (silent copies are marked with a strikethrough). Franks sets his analysis in the context of the multi-attachment theory of movement and is not excessively explicit about the details of the movement of *siebie* 'self'. On the one hand, it is supposed to be associated with v via head movement of Refl, but on the other, *siebie* 'self' has the internal phrase structure in (39b) and (42), and therefore it is not pronounced as attached to v (as its clitic counterpart *się* 'SE' in Polish would be) but as the bottom copy in the chain.

As far as movement of the reflexive is concerned, this proposal converges on the one presented below. Specifically, the reflexive element is not identical with the antecedent; it (covertly) moves and targets the positions of functional heads relevant for the licensing of the morphosyntax of the verb: v and T, which derives the effect of subject orientation. It is also pronounced, via a similar strategy of copy pronunciation, at the bottom of the movement chain. Yet Franks's approach and the one presented here differ on three counts. First, I will be dealing not only with the reflexive pronoun *siebie* 'self', but also with the possessive reflexive *swój* 'self's', whose distributions are not always strictly identical. Second, I will be arguing for a close correlation between the position of the antecedent and the spell-out form of the possessive element (reflexive or pronominal). Third, I try to be more specific about the nature of movement of the reflexive element in different construction types.

4. A Positive Proposal: Binding as Agree and Move

The account of A-binding presented below draws from the Agree-based, Move-inspired, and competition-based theories. It is inspired by a proposal developed for Russian in Nikolaeva 2014, with significant modifications. Nikolaeva (2014) defines A(rgument)-binding in a conservative manner, as the sharing of the index between an antecedent and an anaphor. Building on Chomsky (1986), Vikner (1985), Pica (1987, 1991), Hestvik (1992), and Avrutin (1994), she proposes that binding involves a configuration between the DP antecedent and the pronoun/anaphor wherein pronouns and anaphors are Indices that covertly rise as heads to the positions of v and T. The core of Nikolaeva's (2014: 68) proposal is as follows:

(43) a. Movement: an Index (a reflexive or a pronoun) must undergo covert Index Raising unless it is at a reflexivization site or movement is no longer possible.

(43) b. Reflexivization site: an Index is a sister to a node with label D/v/T and is c-commanded by a specifier.

c. Co-argumental reflexivization: if an Index is at a reflexivization site and is coindexed with a specifier which is its co-argument, the Index has to be realized as reflexive.

d. Reflexivization at Spell-Out: when the sentence is sent to Spell-Out, if an Index is coindexed with a specifier of the projection to which it is adjoined, the Index has to be realized as reflexive.

e. Pronominal is an elsewhere condition: if an Index has not been realized as reflexive, it is realized as pronominal.

Covert movement of the Index is understood as taking place on the same syntactic cycle as overt movement but with copy pronunciation (see Fox 1999, 2002). VP is not a reflexivization site by definition, and the overt position of the Index (pronoun or anaphor) is mostly ignored in the calculation of its binding. A related set of ideas is presented by Safir (2014), who emphasizes that an element which is dependent on another for its interpretation may be spelled out as either a reflexive or a pronoun, depending on morphological resources.[24] Safir submits that, generally, an indexically dependent element (his "D-bound", a terminological convention I shall adopt) is phase-internally c-commanded by its antecedent. It assumes the morphological form of an anaphor, while a further removed D-bound spells out as a pronoun. Phase-internal procedures of Spell-Out depend on morphological choices available to particular languages; such a procedure is proposed for Polish below. Potentially, a D-bound can be indexically dependent on its antecedent under c-command in the LF-relevant representation, but it can be lexicalized as a pronoun when the c-command condition does not hold of the PF-relevant representation or the antecedent is phase-external. In what follows, I take the antecedent to c-command the reflexive (placed at its reflexivization site: T/v) from its case

[24] Safir defines properties of D-bound in the following way (adapted from 2014: 91–92):

(i) Always a variable: D-bound is the same object in SEM (the syntactic input to semantic interpretation) in all cases; it is interpreted as a bound variable regardless of its ϕ-features.

(ii) Always A-bound: the binder of D-bound (its antecedent) must c-command it from an A-position; that is, the D-bound form is A-bound.

(iii) Always feature-compatible: D-bound must be feature-compatible with its antecedent (informally, this property may be termed *antecedent agreement*).

(iv) Spell-out of the morphological shape of D-bound is potentially sensitive to whether A-binding is phase-internal.

(v) Agreement compatible with morphological shape may be determined by phase-internal factors locally distinct from antecedent agreement.

(vi) Anywhere phase-internal shape is not required, D-bound receives default pronominal shape.

position ([Spec, TP] for the nominative subject and [Spec, vP] for the DAT OE). The account of A-binding that addresses the empirical issues raised by examples in (1–3) and (8–11) above rests on four pillars.

First, I propose that the LF-relevant aspect of A-binding (captured through co-indexation in classical Binding Theory) is based on Agree for the ϕ-features, interpretable and valued on R-expressions and pronouns and unvalued on anaphors (D-bounds). Second, I subscribe to what Nikolaeva takes to be Index Raising; I treat it as overt movement of the D-bound with copy pronunciation and show that it has a near equivalent in overt movement in Polish in the form of the distribution of the clitic/weak pronoun (CL/WP). The CL/WP leaves the VP, moves into the functional domain, and optionally climbs into the main clause out of the infinitive. Thus, the movement mentioned in (43a) receives independent overt exemplification. Third, in contrast to clitics/weak pronouns, the chain of D-bound movement shows copy pronunciation, that is, the head of the chain is not pronounced, although the landing site of its movement directly determines the pronunciation of the bottom copy. Fourth, because the D-bound bears two relevant features (one that drives its CL/WP-like movement and the other relevant for its interpretation), either can be valued/satisfied first.

4.1. A-Binding as Upward/Downward Agree

I assume that the D-bound and its antecedent share ϕ-features, but the features of the former need to be valued by the latter:

(44) D-bound: ϕ-features: gender [+int, −val]
number [+int, −val]
person [+int, −val]

Under regular circumstances, the antecedent (prototypically the subject) c-commands the D-bound (prototypically the object), so when one takes the unvalued ϕ-features on the D-bound to function as a probe, one needs to allow for the probe to seek its goal in a c-commanding position (unless a derivation-internal switching of these positions takes place). I assume that this fact calls for the loosening of the strictures of typical downward probing; when the D-bound in (44) cannot find any matching goal in its own c-domain, it can probe upwards within the immediate derivational phase, in line with Rezac 2004, Béjar and Rezac 2009, Hicks 2009, and Zeijlstra 2012. I adopt the following definition of Agree from Biskup (2020: 27):[25]

[25] The issue of upward/downward Agree is at the center of a heated debate. While Zeijlstra (2012) and Bjorkman and Zeijlstra (2014) advocate the idea that upward Agree is the only canonical mode for Agree, Preminger (2013) and Preminger and Polinsky (2015) vehemently argue against it. The original advocates of upward Agree, Rezac

(45) Agree: α agrees with β iff:

a. α has an unvalued feature;

b. β has a matching valued feature;

c. there is a c-command relation between α and β;

d. β is the closest goal to α.

The definition above is suitable for both the downward and upward modes of Agree, because the clause (45c) does not specify whether the probe or the goal should be in the c-commanding position.

In his analysis of binding in English, Hicks (2009) submits that the reflexive shows the following internal structure:[26]

(46) $[_{DP}\ [_{D[\phi]}$ him$]\ [_{NP}$ self$]]$

I adopt (46) for English and take this syntactic object to be equivalent to the D-bound of Safir 2014 and the Index of Nikolaeva 2014. In the English example below, upward Agree operates as follows:

(47) $[_{TP}$ John$_{[3.SG.M]}\ [_{vP}$ <John$_{[3.SG.M]}$> likes $[_{VP}\ [_{DP}\ [_{D[*\phi]}$ __$]\ [_{NP}$ self$]]]]]$

The unvalued ϕ-features of $[_{D[*\phi]}$ __$]$ serve as the probe, search upwards for a matching goal, and find it in the DP *John* in [Spec, vP]; the unvalued features on the D-bound become valued and spelled out as *himself* once the vP phase is completed, with the three steps looking as follows:[27]

(2004) and Béjar and Rezac (2009), argue in favor of a middle position; in principle, Agree should be allowed to operate in both modes (i.e., "flipping" Agree). I subscribe to the idea of the flipping Agree. Were it not for the upward Agree, the D-bound would have to move to a position above its antecedent, after which the antecedent should move across the D-bound again to produce the surface word order. In many cases, there is little evidence for such a scenario and a (last-resort) possibility of upward Agree looks more economical.

[26] In fact, Hicks (2009) has $[_{DP}\ [_{D[\_var]\,[\phi]}$ him$]\,[_{NP}$ self$]]$ probe upward through its [var(iable)] feature, which is always valued on the nominal or pronominal antecedent but unvalued on the reflexive. The valuation of the reflexive's ϕ-features piggy-backs on the Agree for the [var(iable)] feature.

[27] Driven by the need to limit the size of diagrams and representations, I adopt the convention whereby the unvalued ϕ-feature of the D-bound is marked [*ϕ], rather than [−p(erson), −n(umber), −g(ender)], as the Inclusiveness Condition of Chomsky 1995 would have required, as pointed out by a reviewer. The same feature valued after Agree is marked [^3.SG.M], for example, with the diacritic indicating the derivational origin of the feature values. In more complex examples, this is simplified to [^ϕ1], where 1 stands for the ϕ-feature set of the antecedent. My presentational convention is not meant to undermine the Inclusiveness Condition.

(48) $[_{DP}\ [_{D[*\phi]}\ \_\_]\ [_{NP}\ \text{self}]] \rightarrow [_{DP}\ [_{D[\hat{}3.SG.M]}\ \_\_]\ [_{NP}\ \text{self}]] \rightarrow [_{DP}\ [_{D}\ \text{him}]\ [_{NP}\ \text{self}]]$

Thus, a relation of Agree for ϕ-features largely replaces the GB-era index sharing, as applied to Binding Theory of the 1980s.

I take the Polish reflexive pronoun and the reflexive possessive to have representations analogous to (46):

(49) a. $[_{DP}\ [_{[\phi]}\ D]\ [_{NP}\ \text{siebie}]]$
self

b. $[_{NP_1}\ [_{DP}\ [_{[\phi]}\ D]\ [_{NP_2}\ \text{swój}]]\ [_{NP_1}\ \text{dom}]]$
self's house

The reflexive pronoun is a DP. The reflexive (or pronominal) possessive is a DP adjoined to the NP it modifies. The placement of the possessive in the position of the adjunct to NP is advocated in Despić 2013, 2015 and Bošković 2005, 2012 on the basis of the following contrast between Serbo-Croatian (SC) and English:

(50) *Njegov$_i$ najnovij film je zaista razočarao Kusturicu$_i$.
his latest movie is really disappointed Kusturica

(51) His$_i$ latest movie really disappointed Kusturica$_i$.

(52) *Jego$_i$ siostra bardzo pocieszyła Janka$_i$.
his sister$_{NOM}$ very comforted Janek$_{ACC}$
(Intended: 'His sister comforted Janek very much.')

Bošković and Despić interpret this contrast in the following manner: in English, a DP language, the pronominal possessor is placed in the specifier position of DP and its c-domain does not extend beyond DP. The possessor in SC is an adjunct to NP and its c-domain extends beyond it, causing an anti-cataphora effect, a violation similar to a Condition C effect. The Polish example (52) follows SC: the pronominal possessor c-commands outside the NP, triggering the same effect. Assuming that the reflexive possessive is in the same position as its pronominal equivalent, I adopt the structure in (49b).[28]

[28] As discussed in Witkoś 2021a, pronominal possessives in Polish and SC behave in the same way in terms of both (a) causing the anti-cataphora effect and (b) doing so only within the same tensed clause domain (as confirmed in Srdanović and Rinke 2020). Polish differs from SC in the way nominal possessives behave; in the former they are genitive-marked postmodifiers, while in the latter they are adjective-like premodifiers.

4.2. A-Binding and Clitics/Weak Pronouns

The D-bound in Polish shares an important property with the clitic/weak pronoun (hence CL/WP): they both leave the VP and move into the functional domain of the clause. In Polish, the domains for both A-binding and CL/WP distribution overlap (in line with the Tensed Sentence Condition of Chomsky 1981):

(53) a. Jan$_1$ (**go**$_2$) kazał (**go**$_2$) Marii$_3$ [PRO$_3$ (**go**$_2$) CL/WP
Jan$_{NOM}$ him$_{CL.ACC}$ told Maria$_{DAT}$
pokazać **go**$_2$ w lustrze *__go__$_2$].
show$_{INF}$ in mirror
'Jan told Maria to show him in the mirror.'

b. Jan$_1$ (**się**$_{1/2}$) kazał (**się**$_{1/2}$) Marii$_2$ [PRO$_2$ (**się**$_{1/2}$) SELF
Jan$_{NOM}$ REFL told Maria$_{DAT}$
obejrzeć **się**$_{1/2}$ w lustrze].
watch$_{INF}$ in mirror
'Jan told Maria to show him in the mirror.'

(54) Maria$_1$ • kazała • Piotrowi$_2$ [PRO$_2$ • pozdrowić • BIND
Maria$_{NOM}$ told Piotr$_{DAT}$ greet$_{INF}$
swoich$_{1,2}$ przyjaciół].
self's friends
'Maria told Piotr to greet his/her friends.'

In (53a) the CL/WP in Polish can occupy a variety of positions in the clause, but the right-most one must be right-adjacent to the lexical verb. I take this position to be v. It can climb out of the infinitive into the main clause; in the process, it typically occupies positions corresponding to v or T, or positions in their minimal domains. Crucially for my parallel treatment of A-binding and CL/WP distribution, the clitic form of the reflexive pronoun shows the same distribution pattern in (53b).[29] Example (54) shows that the same domain allows for long-distance binding, where the reflexive can be bound either lo-

[29] I also assume that the patterns of distribution of the full form of the reflexive pronoun *siebie* 'self' and its clitic equivalent *się* 'SE' are the same. Kupść (2000) confirms that, in general, this is the case, but there are rare cases when particular verbs select only for the strong form:

(i) Jan siebie/?*się lubi / rozumie / kocha.
Jan self SE likes understands loves.
'Jan likes/understands/loves himself.'

cally, by an object-controlled PRO, or non-locally, by the subject of the main clause. It is proposed below that syntactic movement similar to that of the CL/WP is relevant for A-binding, as the local domains for both phenomena overlap.[30] I assume that the positions of the bullets in (54) correspond to positions called "reflexivization sites" in Nikolaeva 2014. CL/WP is impoverished in its set of ϕ-features: only the [number] and [gender] features are both interpretable and valued in it, but not the [person] feature, which is interpretable but unvalued (see Franks 2017 for an analysis of CL/WPs along these lines):

(55) Clitic/weak pronoun:

gender	[+int, +val]
number	[+int, +val]
person	[+int, −val]

Due to lack of value of the [person] feature, CL/WP cannot express its ϕ-features in situ and moves to a position of v (and T), where the valuation of the [person] feature takes place, in line with upward Agree and the following principle (Béjar and Rezac 2003: 53):

(56) Person as Probe: an interpretable person feature must be licensed by entering into an Agree relation with a functional category.

Béjar and Rezac assume that v bears the [−int, +val] person feature and some form of the [+EPP], either as an independent property or a sub-feature of the [person] feature, as in Pesetsky and Torrego 2001, to generate displacement. The CL/WP moves to this head position, or its minimal domain, to become ϕ-complete.[31] Its further movement to T and onwards is equivalent to clitic climbing. I submit that the D-bound follows a similar derivational path, but unlike CL/WP, it bears no valued ϕ-features at all; indexically dependent elements end up carrying the ϕ-features of their antecedents, which produces the effect of antecedent agreement. The D-bound shows the following features:

Kupść suggests that the predicate may lexically select for a particular form (strong/weak) of the reflexive. I leave this issue for further research.

[30] The analogy between Index Raising and clitic movement is forcefully argued in Hestvik 1992.

[31] I assume the idea that the Polish CL/WP bears an unvalued [person] feature, while v bears a valued [person] feature, following Béjar and Rezac (2003) and Franks (2017), who elaborate on this arrangement of features further and find it useful for explanation of the Person Case Constraint (PCC) and CL/WP ordering in the pronominal cluster in many Slavic languages.

(57) D-bound/Index: ϕ-features:

gender	[+int, −val]
number	[+int, −val]
person	[+int, −val]

I assume that in constructions with the D-bound, v bears an unvalued person feature ([−int, −val]), which is nevertheless equipped with the [+EPP] property.[32] Crucially, it attracts the D-bound just like it attracts CL/WPs. Analogously, $[_{[*\phi]}$ D] of the D-bound is able to move further to v/T within the domain determined by the Tensed S-Condition of Chomsky 1981, according to the scenario sketched out in Roberts 2009, where clitic climbing involves attraction/sharing of the feature between the D-bound and the v/T heads.

I have been stressing the parallel between CL/WP climbing and A-binding because they are both confined to the tensed sentence and neither can leave it. This is the key distinction between CL/WP and phrasal arguments in Polish, which can also occupy all the positions marked with the bullets in (54), but additionally, they can be moved out of the subjunctive CP domain, as shown below. Willim (1989) and Tajsner (1990) show that Polish tensed clauses are opaque to extraction of phrasal elements via A' movement, with the exception of extraction out of subjunctive clauses selected by *chcieć* 'want'. These clauses are quite transparent to phrasal wh-movement and topicalization/scrambling; see (58–59). However, they are not transparent to either CL/WP (60), reflexive clitic (61), or binding domain extension (62):

(58) Którą książkę chcesz [żeby [studenci przeczytali *t* ?]]
which $book_{ACC}$ $want_{2SG}$ so.that $students_{NOM}$ $read_{PERF.PAST}$
'Which book would you like the students to read?'

(59) Tamtą książkę Jan chce [żeby [studenci przeczytali *t* ?]]
that $book_{ACC}$ Jan $want_{3SG}$ so.that $students_{NOM}$ $read_{PERF.PAST}$
'Jan would like the students to read THAT BOOK.'

(60) *Jan go chce [żeby [studenci pozdrawiali]]
Jan_{NOM} him_{ACC} wants so.that $students_{NOM}$ greeted
(Intended: 'Jan wants the students to greet him.')

(61) *Jan się chce [żeby [studenci golili *t* co rano]]
Jan_{NOM} REFL wants so.that $students_{NOM}$ shaved every morning
(Intended: 'Jan wants the students to shave every morning.')

[32] Pesetsky and Torrego (2007) allow for Agree (and movement relations) involving probes/goals that share unvalued features, which obtain a value at a later stage of the derivation. The unvalued [person] feature on v later receives the value of the [person] feature of the antecedent to the D-bound.

(62) Jan_1 chce [żeby [$studenci_2$ patrzyli na $siebie_{*1/2}$]]
Jan_{NOM} wants so.that $students_{NOM}$ looked at self
'Jan wants the students to look at themselves/each other/him.'

If both CL/WP climbing and D-bound raising were to constitute a subtype of phrasal A'-movement, they should be extractable from *żeby* 'so that'-complement clauses. Infinitives, on the other hand, are transparent domains to all types of movement in Polish, including the most demanding one in the form of head movement. Needless to say, taking clitic climbing and binding as reflexes of head movement has a long-line ancestry in linguistic research: Hestvik 1992, Avrutin 1994, Safir 2004, Nikolaeva 2014, Franks 2021, etc. Yet I am aware of the fact that the status of the CL/WP as the head or maximal projection is not clear. On the one hand, it shares many distributional properties with pronominal clitics in other Slavic languages, but on the other, it behaves more like a maximal projection than a head; it does not target a strictly defined position in the clause (see (63a–b)),[33] it does not form rigid clusters (see Franks and King 2000; Migdalski 2016), and even when it does, the order in the cluster may be flexible (Franks 2017: 264):

(63) a. ?Pokazali mu cię wczoraj.
$showed_{VIR}$ him_{DAT} you_{ACC} yesterday
'They showed him you yesterday.'

b. Pokazali cię mu wczoraj.
$showed_{VIR}$ you_{ACC} him_{DAT} yesterday
'They showed you to him yesterday.'

Furthermore, Franks (2017) compiles data from Slavic languages showing that the neat division of pronominal categories into X^0/XP status and their classification in Cardinaletti and Starke 1994 need to be reconsidered. Additionally, analyses presented in Cetnarowska 2003 and Migdalski 2016 indicate that the set of Polish CL/WPs is not homogenous; the X-bar status of $mi_{1SG.DAT}$ and $ci_{2SG.DAT}$ may be different from the X-bar status of $mu_{3SG.M.DAT}$ and $go_{3SG.M.ACC}$. It is then plausible that the overt stage of movement of the CL/WP is followed by a covert stage, where v/T is targeted. Thus, for want of a better term, I content myself with the conclusion that whatever the CL/WP is,

[33] The CL/WP does not always attach to the T head in overt syntax:

(i) Ja bym przecież go wtedy rozpoznał.
I AUX_{COND} thus $him_{3SG.M.ACC}$ then $recognized_{PRTC}$
'But I would recognize him then.'

The clitic/weak pronoun cannot occupy the position of v/T, as it is separated from both the conditional auxiliary (assuming it occupies T) and the main verb (at v) by adverbs.

its movement trajectory in overt syntax corresponds to that of the D-bound in covert syntax. Significantly for my account of binding, both the D-bound and the CL/WP move upward out of the VP, and they can (but do not have to) move out of infinitive complements. These two properties of their landing site options suffice to provide for complex anaphoric binding facts in Polish, as discussed at length in Witkoś et al. 2020 and Witkoś and Łęska 2020.[34]

Other types of covert movement have been proposed to account for binding in Slavic. For example, Safir (2004) assumes that binding relations employ movement of different types, but while English uses A-movement (for the binding of the subject of the ECM complement) and French and German use clitic movement (overt and covert, respectively), Russian (close to Polish) does not. Because Russian reflexives are subject-oriented and respect the TSC, Safir objects to extending the covert clitic-movement strategy, as excorporation of adjoined heads is impossible, among other issues. Instead, he proposes that Russian (and Hindi) use covert A'-movement; this operator movement has its overt equivalent in the form of English *tough*/*worth*-constructions, where the movement respects TSC:

(64) ?Alex_1 is tough to persuade Anna_2 [$_{\text{TP}}$ OP_1 [$_{\text{TP}}$ PRO_2 to talk to t_1]]

(65) *Alex_1 is tough to persuade Anna_2 [$_{\text{CP}}$ that [$_{\text{TP}}$ OP_1 [$_{\text{TP}}$ she_2 should talk to t_1]]]

[34] As a *JSL* reviewer observes, CL/WP needs to move past V, which points to a phrasal status of this movement; yet at the same time, it cannot leave the infinitive, which points to head movement; see (60). In fact, a procedure of V-to-v movement solves the issue of moving CL/WP to V, as V becomes a component of v. In Witkoś and Łęska 2020, it is proposed that CL/WP should move as a minimal/maximal projection in the sense of Bare Phrase Structure (Chomsky 1995). A technical alteration to the structure in (49) is introduced, so that it should become more compatible with what Bošković (2002) proposes for clitic pronouns and clitic auxiliaries; [$_{\text{D[ϕ]}}$ Ø] must be placed in the specifier position of an empty head, because it cannot project and branch:

(i) [$_{\text{DP}}$ [$_{\text{D[ϕ]}}$ Ø] [Ø$_{\text{D}}$ [NP …]]]

With Matushansky (2006), Vicente (2007), Landau (2006), and Franks (2017), Witkoś and Łęska (2020) assume that the X^0/XP can move via the path accessible to XPs. Hence, from the structure in (i), the minimal/maximal [$_{\text{D[ϕ]}}$ Ø] moves out into [Spec, vP] and/or [Spec, TP], possibly each time tucking in under the primary specifier position filled with the subject argument or DAT OE:

(ii) [$_{\text{vP}}$ $\text{DP}_{SUB/DAT\ OE}$ [$_{\text{v'}}$ [$_{\text{D[ϕ]}}$ Ø] [$_{\text{v'}}$ v [$_{\text{VP}}$ (DP_{IO}) [$_{\text{V'}}$ V [$_{\text{DP}}$ [$_{\text{D[ϕ]}}$ Ø] [Ø$_{\text{D}}$ [NP …]]]]]]]

This movement meets the empirical requirements placed on both clitic climbing and A-binding domain extension if we make a conservative assumption that an X^0/XP constituent must meet locality conditions which are common to both head and phrasal movement.

Yet this movement displays idiosyncratic properties; Safir assumes that the operator adjoins to TP or right below. The operator can target the lower TP, so either PRO or *professor* is the antecedent for the reflexive in (66) below:

(66) a. Professor$_1$ poprosil assistenta$_2$ [PRO$_2$ čitat' svoj$_{1/2}$ doklad]
professor$_{NOM}$ asked assistant$_{ACC}$ read$_{INF}$ self's report
'The professor asked the assistant to read his report.'

b. Professor$_1$ poprosil assistenta$_2$ [$_{TP}$ svoj$_2$ [$_{TP}$ PRO$_2$ čitat' svoj$_{1/2}$
professor asked assistant read self's
doklad]]
report

c. [$_{CP}$ [$_{TP}$ svoj$_1$ [$_{TP}$ Professor$_1$ poprosil assistenta$_2$ [$_{TP}$ svoj$_1$ [$_{TP}$ PRO$_2$
professor asked assistant
čitat' svoj$_{1/2}$ doklad]]]]]
read self's report

Yet I remain committed to the analogy between A-binding and CL/WP distribution for several reasons. First, Polish shows that the scope of overt clitic/weak pronoun distribution overlaps with the scope of A-binding, while it does not show an overt equivalent to the English *tough*-construction. Second, excorporation is less of a problem if the reflexive element [$_{[\phi]}$ D] is a CL/WP and is both [+minimal/+maximal] in terms of Bare Phrase Structure. Third, Polish has dative experiencers with binding properties distinct from the binding properties of nominative subjects placed in [Spec, TP]; see (9–11). On the analysis in Safir 2004, DAT OEs placed in [Spec, vP] should not c-command the operator adjoined to TP from their case position to license a reflexive form.

4.3. A-Binding and Copy Pronunciation

So far, the similarity between the [$_{[\phi]}$ D] head and CL/WP was crucial: they share the deficiency in the [person] feature licensing. Yet there is one respect in which they are different from each other. Franks (2017) postulates that CL/WPs are deficient in three dimensions: semantic, structural, and phonological. The last property distinguishes [$_{[\phi]}$ D] from CL/WP. In (54) above, [$_{[\phi]}$ D] moves from [$_{DP}$ [$_{[\phi]}$ D] [$_{NP}$ …]] to the head v/T. Yet the D-bound is not phonologically impoverished the way clitics are. Movement of [$_{[\phi]}$ D] forms a chain in which the copy is pronounced (compare the positions of *się* 'SE' in (53b), where *się* is pronounced at the head of the movement chain, and *swój* 'self's' in (54), where *swój* is pronounced at the tail of the movement chain). The valuation of the ϕ-features under Agree with the antecedent NP in [Spec, vP/TP] is a signal for [$_{DP}$ [$_{[\phi]}$ D] [$_{NP}$ …]] in the VP-internal position to be pronounced as a reflexive/

reflexive possessive (*siebie/swój* 'self/self's').[35] In other cases, the VP-internal [[$_{DP}$ [$_{[\phi]}$ D] [$_{NP}$ …]]] is pronounced as a pronoun/pronominal possessive.

In view of the discussion so far, the following Lexicalization Rule emerges:

(67) The D-bound Lexicalization Rule:

The D-bound contributes to the lexicalization of [[$_{DP}$ [$_{[\phi]}$ D] [$_{NP}$ …]]] as reflexive when

a. [$_{[\phi]}$ D] is adjoined to v/T, and

b. the ϕ-features of the [$_{[\phi]}$ D] are valued under Agree against the ϕ-features of the NP in [Spec, vP/TP], and

c. the antecedent must occupy its case position.

d. Otherwise, the D-bound/Index is lexicalized as a pronoun.[36]

The rule in (67) implies that the lexical form of [[$_{DP}$ [$_{[\phi]}$ D] [$_{NP}$ …]] depends not only on the ϕ-features valued on it by the antecedent (as in Reuland 2011 or Rooryck and Vanden Wyngaerd 2011), but also on the relative positioning of [$_{[\phi]}$ D] with respect to the antecedent, an option envisaged in Safir 2014 and Nikolaeva 2014. The procedure of Spell-Out scans the domain not only for the features valued in the derivation (the ϕ-features of the D-bound), but also for the relative positioning of the antecedent with regard to the D-bound (does the former c-command the latter? Are they both in the same derivational phase?). As a result, subject and non-subject antecedents lead to distinct lexicalizations of the binding relation. For example, in (68) on the opposite page, [$_{[\phi]}$ D] moves out of the VP and adjoins to v/T, in line with (67a). As the subject NP is the only potential local antecedent, [$_{[\phi]}$ D] can become involved in Agree and have its ϕ-features valued by the c-commanding subject (3SG.F) in situ before this movement, or it can move first, still carrying its unvalued ϕ-features, and agree next. Either way, condition (67b) is met and the bottom of the chain of the D-bound is spelled out as reflexive:

[35] A similar idea of movement and copy pronunciation is applied to binding in German in Safir 2004 and in Lee-Schoenfeld 2008 (esp. p. 291). In the latter source, the licensing of *sich* 'self', co-indexed with 'mother', requires covert movement:

(i) Die Mutter$_i$ lässt [$_{vP}$ die Kleine$_j$ sich$_{?i/j}$ /ihr$_{i/*j}$ die Schokolade in
the mother lets the little.one self her the chocolate in
den Mund stecken].
the mouth stick
'The mother lets the little girl stick the chocolate in her mouth.'

[36] I keep the distinction between co-argument and non-co-argument reflexivization, i.e., Nikolaeva's proposal in (43c) vs. (43d).

(68) a. [$NP_{[3SG.F]}$ [$_D$ ^3SG.F]-v/T … [$_{VP}$ V [[$_{DP}$ [$_{[*\phi]}$ D] [$_{NP}$ …]]]]

b. Maria lubi swoją nową koleżankę.
Maria$_{3SG.F.NOM}$ likes self's new friend$_{3SG.F}$
'Maria likes her new friend.'

The situation is different in the case of an object antecedent. In the ditransitive construction in (69), [$_{[\phi]}$ D] has its ϕ-features valued by a local c-commanding NP object (3SG.M) via upward Agree. Subsequently, the D-bound moves to v/T, in line with (67a).[37] The spell-out rule clause in (67d) applies, because the NP in [Spec, v/T] is not the antecedent for the D-bound. The D-bound spells out as pronominal:

(69) a. [$NP_{[3SG.F]}$ [$_D$ ^3SG.M]-v/T … [$_{VP}$ $NP_{[3SG.M]}$ [V [[$_{DP}$ [$_{[^{\wedge}3SG.M]}$ D] [$_{NP}$ …]]]]

b. Maria przedstawiła Piotrowi jego nową
Maria$_{3SG.F.NOM}$ introduced Piotr$_{3SG.M.DAT}$ his new
koleżankę.
colleague$_{3SG.F.ACC}$
'Maria introduced to Piotr his new colleague.'

A simple lexicalization rule applying right after the ϕ-feature valuation or a rule concerned exclusively with the ϕ-feature valuation of the reflexive element, as proposed in Reuland 2011 or Rooryck and Vanden Wyngaerd 2011, cannot distinguish between binding by the subject and binding by the object, whereas a rule sensitive to the ϕ-feature valuation itself, as well as the structural relation of c-command between the antecedent and the D-bound in a local domain, as proposed in Safir 2014, can capture this distinction. The spell-out rule in (67) applies in the domain of the phase, so it does not require non-local licensing. What it requires is its application at the point in the derivation where the NPs in the specifier positions in (68–69) are accessible. The form of D-bound (reflexive or pronominal) depends on the matching or non-matching of its ϕ-features with the specifier of v/T. The key instruction for the form of the D-bound to be spelled out stems from this local Spec-head relation. The detailed application of the domain-sensitive spell-out procedure in (67) is exemplified in the examples discussed in §5.[38]

[37] As my proposal allows for both upward and downward Agree, and I need to allow free ordering between operations Agree and Move resulting in anaphoric binding, in (69) the D-bound could first move to adjoin to v and only then probe downward for the features of the NP object, with no consequences for the spell-out procedure of the D-bound. I am grateful to a *JSL* reviewer for pointing out this possibility.

[38] I assume that the entire phrase [[$_{DP}$ [$_{[^{\wedge}\phi]}$ D] [$_{NP}$ …]]] in (67) is lexicalized as *siebie* 'self' or *swój* 'self's'. The notion that a phrasal structure larger than a head can be

4.4. A-Binding as "Agree and Move" or "Move and Agree"

Key properties of the derivation stem from the probing procedures in which two properties of $[_{[\phi]}$ D] are involved: the *ϕ-features probing for a c-commanding NP goal and the unvalued [person] feature. The latter is attracted by the [–val, person] feature on v/T. This Agree and feature-sharing relation forces movement of $[_{[\phi]}$ D] to v/T. While the valuation of the ϕ-feature set is relevant for the LF-interpretation of the D-bound, the feature sharing of the [person] feature with v/T, movement of $[_{[\phi]}$ D] to v/T, and its further clitic climbing are relevant for its lexicalization at Spell-Out. In principle, either feature can be accessed first in the derivation, with distinct consequences. But this is nothing new in the landscape of binding phenomena. Similar English cases come from Hicks (2009: 158), for whom the reflexive also seeks its antecedent via upward Agree:

(70) a. $John_1$ wondered [which pictures of $himself_{1/2/3}$] $Bill_2$ claimed $Paul_3$ had bought.

b. $John_1$ wondered $[_{CP}$ $[_{DP}$ which pictures of $himself_{1/*2/*3}$] $Bill_2$ claimed $[_{CP}$ $<[_{DP}$ which pictures of $himself_{*1/2/*3}]>$ $Paul_3$ had bought $<[_{DP}$ which pictures of $himself_{*1/*2/3}]>$

Hicks assumes that the ambiguity of binding in (70) stems from the interplay between the copy theory of movement and probing for the features on the part of the reflexive in (70b). He allows for a derivational lag in the valuation of this feature: so either the reflexive probes from its original position, receiving the interpretation marked as 3, or it probes later, after the constituent containing *himself* has been moved to satisfy the needs of the wh-feature. The latter valuation tactic bears fruit as interpretations marked 2 or 3. Thus the wh-feature drives movement, while the unvalued features on the reflexive drive the setting up of an indexical dependency and either feature can be satisfied first. Binding Condition A is liberal and can be satisfied at any point in the derivation, as proposed in Belletti and Rizzi 1988 and Lebeaux 2009. Once anaphoric binding is translated into some feature-checking mechanism, irrespective of its exact form, the valuation of the feature providing for the A-bound interpretation needs to be liberal with respect to the point of its application in the derivation. As (70) shows, the valuation of the features relevant for binding

lexicalized as a word is advocated in Vicente 2007, Starke 2009, and Caha 2009. When a sub-constituent of this larger structure is (copied and) moved away, it is still the larger structure including the copy of the moved sub-constituent that is spelled out. The sub-extracted part only receives, at its landing site, an instruction as to whether its source constituent in (68) and (69) is lexicalized as reflexive or not, in line with (67).

takes place either early in the derivation, before wh-movement, or after the movement.[39]

5. A Composite Account

In this section, I present a number of examples where reflexive binding applies, focusing on the binding of reflexive possessives, with the aim of showing that the account outlined above is descriptively adequate.

5.1. Reflexive Possessives in the Simple Clause

Let me start with constructions involving a ditransitive verb in a simple clause:[40]

(71) Maria$_1$ pokazała Piotrowi$_2$ [[swoje$_{1,*2}$/jego$_2$/jej$_{*1}$] zdjęcie]
Maria$_{NOM}$ showed Piotr$_{DAT}$ self's his her picture$_{ACC}$
'Maria showed Piotr her/his picture.'

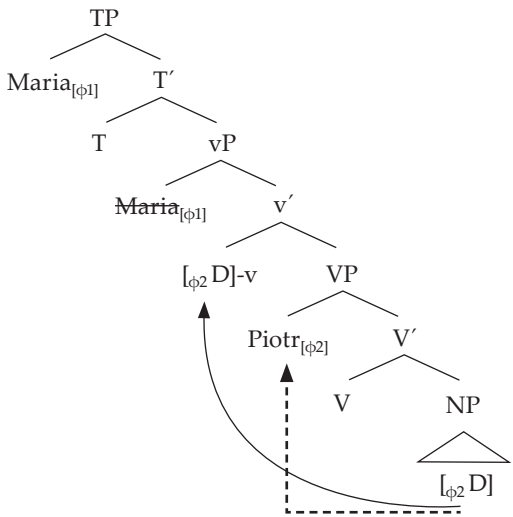
Two interpretations of (71) depend on the order between the upward probing by the ϕ-features and movement driven by the [–val, person] feature shared between v and the ϕ-feature complex of [$_{[*\phi]}$ D]. When the order of operations is such that the ϕ-features search for their values from the base position of [$_{[*\phi]}$ D] via upward Agree, they encounter the c-commanding object *Piotr* as

[39] Both reviewers for *JSL* raise the issue of the relative timing of Agree relevant for binding, which appears to be quite arbitrary within the derivation. I admit that this is the legacy of A-binding seen as Move α (Pica 1987, 1991; Chomsky 1986, etc.) and contrasts with the valuation of case, taking place as soon as possible. Ideally, the timing for both types of feature valuation should converge, as in Reuland's (2011) approach. Yet, as shown in §2, the empirical scope of this approach is quite limited. Needless to say, the issue of interrelation between the timing of ϕ-feature valuation relevant for binding and the valuation of case is a topic for a separate contribution.

[40] A reviewer for *JSL* observes that ϕ-feature valuation of the adjective *swoje* 'self's' is further complicated by NP-internal concord, where it needs to agree in number and gender with the head noun of its NP. This fact forces *swoje* 'self's' to contain two sets of ϕ-features, one set valued against N within the NP and the other against the NP-external antecedent. Clearly, this paper deals only with the latter procedure, with the former procedure remaining beyond the scope of its interest. Let me, however, outline two possibilities. First, it is imaginable that from its base position adjoined to NP, the reflexive possessive c-commands the N as the goal and has its features valued against it as a result of downward Agree (Danon 2011). So the NP-internal set of ϕ-features on the reflexive possessive would be valued in narrow syntax early in the derivation. Alternatively, NP-internal concord can be taken to result from post-syntactic NP-internal feature spread on the PF branch of grammar (Norris 2014).

goal and obtain its values (represented collectively as 2). Next, the [person] feature of the ϕ-feature set is involved in Agree and feature sharing with the relevant [−val, person] probe on v, and $[_{[\wedge\phi 2]}$ D] moves to it.[41] The Lexicalization Rule in (67) returns a pronominal form (*jego* 'his') at Spell-Out—[Spec, vP] and [Spec, TP] are not occupied by an NP whose ϕ-features are shared with $[_{[\wedge\phi 2]}$ D]:[42]

(72)



The straight dotted line in (72) indicates upward Agree for ϕ-features between the D-bound and its antecedent (*Piotr*) in the object position. The curved solid arrows indicate the movement of $[_{[\wedge\phi 2]}$ D] to v and T. I believe that $[_{[\wedge\phi 2]}$ D] still remains an active element of the derivation on the assumption of Chomsky (2001) and Pesetsky and Torrego (2001) that valued features remain visible until a given derivational phase (here vP) is completed. Furthermore, the relation between v [−val, person] and $[_{[\wedge\phi 2]}$ D] is also allowed by the Principle of Minimal Compliance (PMC) applied to the combination of operations Agree and Move (Richards 1997, 1998; Landau 2000): the more local relation of the

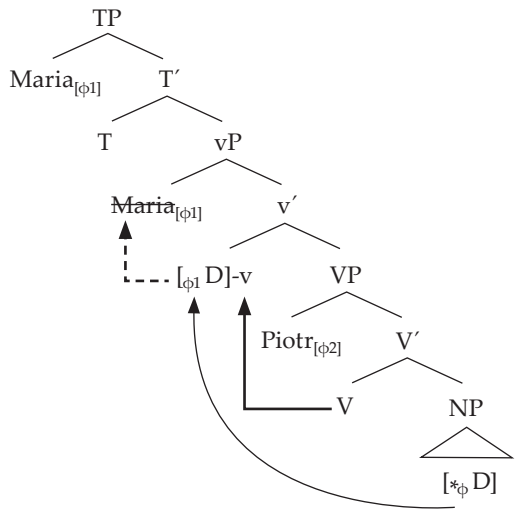
[41] Following the discussion on the nature of CL/WP in the previous section, $[_{[\phi]}$ D] can move as X/XP to form the inner [Spec, vP] and only then merge with v. Such a scenario is provided in Nikolaeva 2014. Also, see fn. 34.

[42] Incidentally, as pointed out by a reviewer, the definition of Agree in (45) allows $[_{[*\phi 2]}$ D] to move to v first and next probe downward for the features of the object, with the resulting interpretation of the object serving as the antecedent. The spell-out rule in (67) still produces the pronominal possessive form.

ϕ-feature valuation opens up the way for the less local relation of movement involving v and [$_{[\phi 2]}$ D].[43]

The outcome of this derivation is different when the movement of [$_{[*\phi]}$ D] to v precedes its participation in upward Agree. When [$_{[*\phi]}$ D] is moved out of VP and adjoined to v first, the probing for the ϕ-features from this position finds the subject *Maria* as the goal, the ϕ-features receive its values (collectively marked in the diagram as 1), and the Lexicalization Rule in (67) returns a reflexive form (*swój* 'self's'), as now the NP in [Spec, vP]/[Spec, TP] bears the same ϕ-feature values as [$_{[\hat{}\phi 1]}$ D]. Solid arrows represent the movement of the verb:

(73)



I assume that this order of operations respects minimality conditions. The movement across NP *Piotr*$_2$ is possible due to the PMC, bearing in mind the upward probing nature of the ϕ-features on [$_{[*\phi]}$ D]. The PMC requires that an initial legitimate local relation involving a particular head (probe) in domain

[43] Richards (1997, 1998) shows that grammatical principles are observed once in a particular domain and then ignored by further operations applying to the same domain. For instance, in Bulgarian, multiple wh-movement observes superiority, but once the most superior wh-phrase has moved, the others move in random order. Landau (2000: 70–71) discusses cases of subject control (across the object, as in *John promised Mary to do the dishes*) in the following configuration:

(i) [T_1 … DP_1 … v_1 … DP_2 [$_{CP}$ T-Agr_1 [$_{TP}$ PRO_1 ….]]]

For subject control to hold here, T_1 must access the complex T-Agr_1 across another potential probe, v_1. The PMC allows for it, as T_1 is first involved in a legitimate local Agree with DP_1. Once this relation is executed, T_1 becomes involved in a less local, minimality-violating relation with T-Agr_1, across v_1.

D should "pay the derivational tax" and open the way to a less local relation. In (73) the more local V-to-v movement licenses the less local movement of $[_{[*\phi]}$ D] to v. Both movements apply in the domain of vP. The delay in the valuation of the ϕ-features here reflects the generally accepted idea that satisfaction of Binding Principle A need not apply immediately, but at different stages of the derivation (Belletti and Rizzi 1988; Lebeaux 2009).

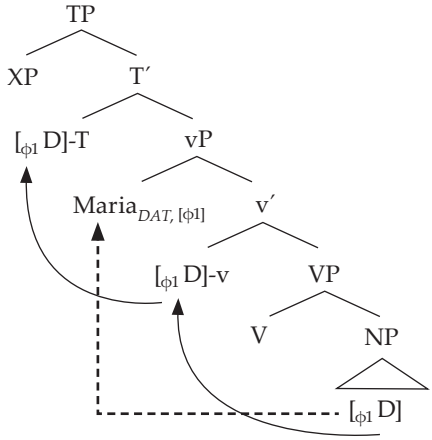
Let me now present a detailed account of the derivation of a non-verbal predicate with a DAT OE, seen in (9) and repeated below:

(74) a. Marii$_1$ było żal siebie$_1$ /*?jej$_1$ (samej).
Maria$_{DAT}$ was$_{3SG.N}$ sorrow self$_{GEN}$ *?her$_{GEN}$ alone
'Maria felt sorry for herself.'

b. Marii$_1$ było żal swojej$_1$ /jej$_1$ koleżanki.
Maria$_{DAT}$ was$_{3SG.N}$ sorrow self's$_{GEN}$ her$_{GEN}$ friend$_{GEN}$
'Maria felt sorry for her female friend.'

Either order of relevant operations (Agree for ϕ-features or Move $[_{[\hat{}\phi]}$ D] to v/T) leads to the configuration in which the $[_{[\hat{}\phi]}$ D] is placed in a position adjoined to v. When it stays there, the Lexicalization Rule (67) predicts the spell-out of the reflexive possessive, but when it (optionally) raises to T, the possessive is spelled out as pronominal. XP marks the overt position of the DAT OE:

(75)



The position of XP can be defined in two ways. One is to say that it is a topic, either adjoined to TP or occupying a designated position in the left periphery, per Rizzi 1997, 2014.[44] The other is to say that it occupies a hybrid A/A′ posi-

[44] Ionin (2001) observes that preverbal arguments in SVO/OVS sentences with neutral intonation are topics (topic being 'what the sentence is about'). Either order can an-

tion, which is, crucially, not a case position for it, as proposed in Germain 2015 and Citko et al. 2018.[45]

5.2. The Reflexive Possessive in the Infinitive Complement

The full menu of interactions between both valuation procedures shows in long-distance binding. In the context of an infinitive clause (exemplifying object control), the antecedent for the D-bound/Index is either the more local PRO or the more remote subject of the main clause. Significantly, the D-bound/Index can be lexicalized as either a reflexive possessive or a pronominal possessive for both indexical dependencies.

(76) Maria$_1$ kazała Piotrowi$_2$ pozdrowić swoich$_{1,2}$/jego$_2$ /jej$_1$
Maria$_{NOM}$ told Piotr$_{DAT}$ greet$_{INF}$ self's his her
przyjaciół.
friends$_{ACC}$
'Maria told Piotr to greet his/her friends.'

The set of procedures used to account for the four interpretive possibilities of (76) involves only independently attested operations such as Agree, Move, in either order, and the PMC. So Reuland's (2011) postulate of treating anaphoric binding as "an accidental outcome of independent derivational procedures" is met. The diagrams on the following pages serve as illustrations for four relevant derivations. In all of them, the relation of object control holds, spanning

swer general questions of the 'what happened' type.

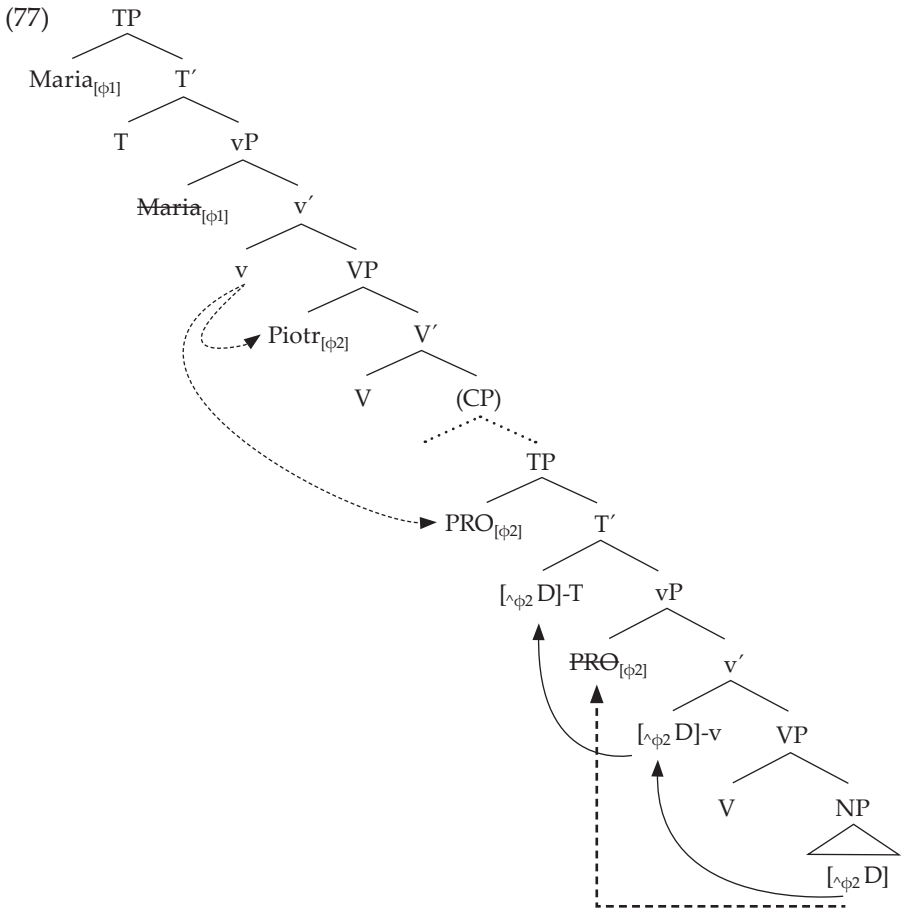
[45] Germain (2015) and Citko et. al. (2018) argue that feature transfer from the phase head to its complement head can be split (Split Feature Inheritance), and either both ϕ-features and the [+EPP] property are inherited by the complement head or only the ϕ-features are inherited and the transfer of the [+EPP] property is withheld. They analyze Russian constructions in which [+EPP] is not satisfied by nominative-marked DPs and conclude that three conflicting properties evidence the hybrid nature of this position: (a) the fronted constituent does not reconstruct (see Bailyn 2004), (b) the OVS word order facilitates a neutral wide-scope reading, and (c) the non-nominative DP cannot bind reflexives from its landing site (no A-position status). Germain proposes that feature inheritance is split, and C (Fin in her account, after Rizzi 1997) passes only ϕ-features to T but retains the [+EPP] property. Hence, nominative is valued under Agree on the postverbal DP, while the non-nominative DP can move up to [Spec, FinP] to satisfy the [+EPP] property:

(i) Russian Left Periphery (Germain 2015: 428)
[$_{\text{ForceP}}$ Force [$_{\text{TopP}}$ Top [$_{\text{FocP}}$ Foc [$_{\text{FinP}}$ Fin]]]]

the infinitive boundary and facilitating relations between elements placed in both clauses.

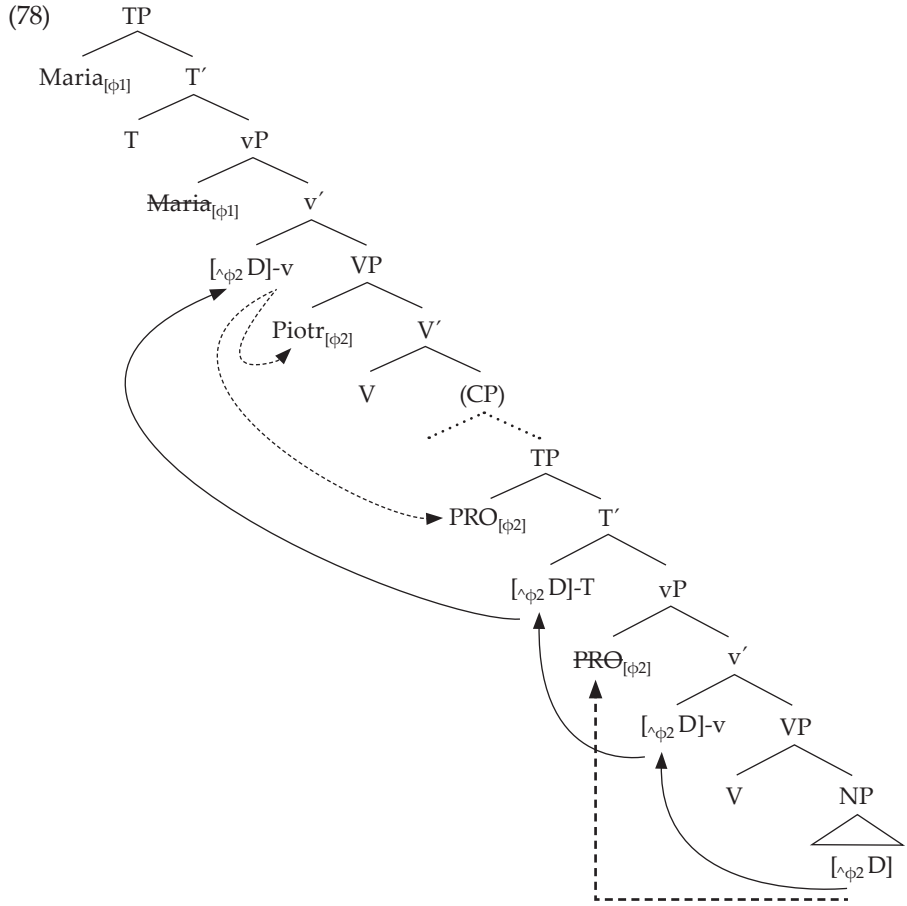
First, let me present the structure in which *Piotr*$_2$ antecedes the reflexive, (77) below. The curved dotted arrows indicate the relation of control, seen as a type of Agree (Landau 2000). The straight dotted arrow indicates (upward) Agree, while solid curved arrows indicate the covert movement of the D-bound. Agree between PRO$_2$ and the ϕ-features of the D-bound holds first, and next the [−val, person] feature on v forces the movement of the D-bound to v/T in the embedded clause. As a result, the D-bound is lexicalized as reflexive, in line with (67):

(77)



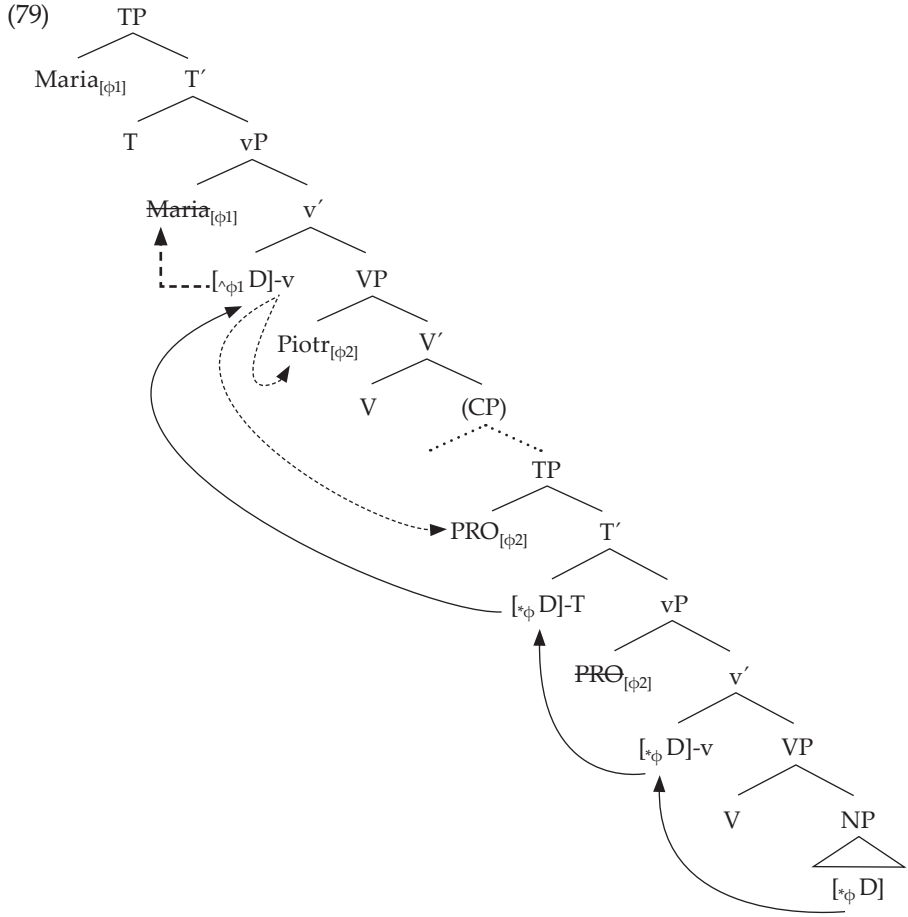
In a second scenario, illustrated in (78), the order of operations is the same; so first the ϕ-features are valued against PRO$_2$, and next the [−val, person] feature of v/T forces movement of [$_{[\hat{}\phi 2]}$ D], but here [$_{[\hat{}\phi 2]}$ D] clitic-climbs to the

main clause. This operation is compatible with minimality requirements due to PMC: both object control and a local V-to-v movement in the main-clause vP phase open the way for the less local climbing of $[_{[\wedge\phi 2]}$ D] to v of the main clause. As a result, the LF-interpretation of the anaphoric relation is identical to the previous scenario (*Piotr*$_2$ = D-bound$_2$), but the lexicalization is different, as $[_{[\wedge\phi 2]}$ D] is locally c-commanded at its landing site by *Maria*$_1$, which does not share its ϕ-features (collectively marked as 2):

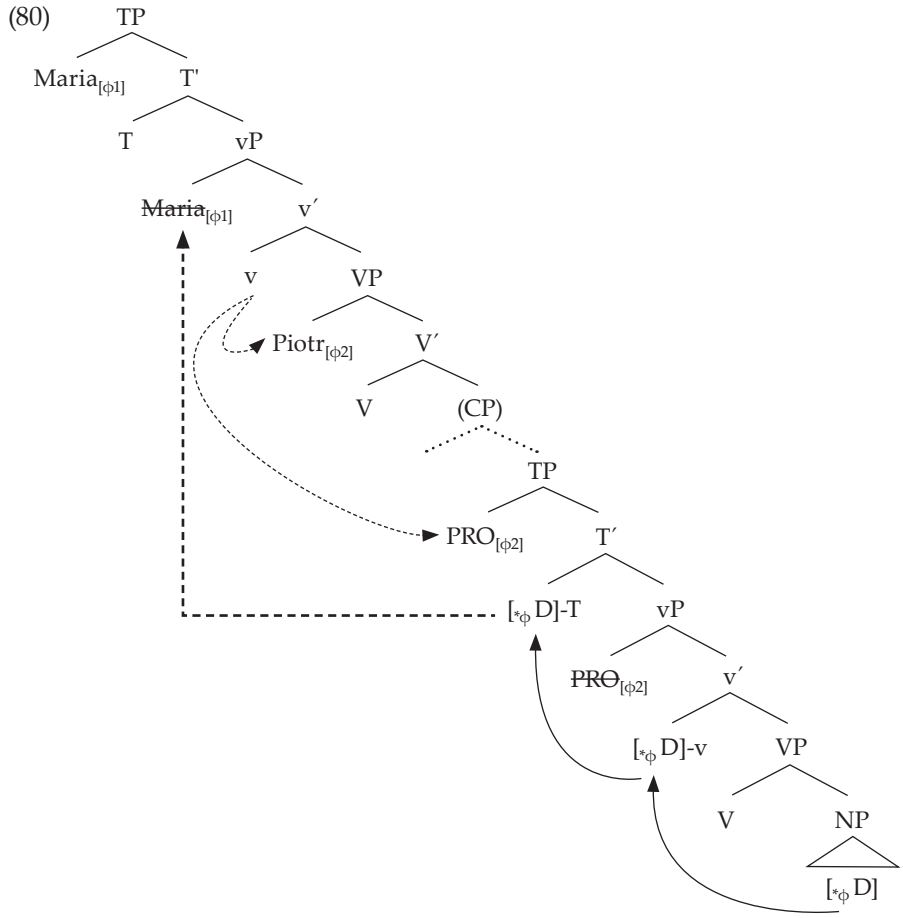


Another scenario, presented in (79) on the following page, represents the interpretation in which *Maria*$_1$ is the antecedent for $[_{[*\phi]}$ D]. In this case, the movement to v/T in the main clause, driven by the [−val, person] feature of $[_{[*\phi]}$ D], takes place first, its way paved by the object-control relation and V-to-v movement in the main clause, crucial for the PMC. Once $[_{[*\phi]}$ D] has moved, its ϕ-features probe upwards to reach the nearest c-commanding goal and ob-

tain its values (collectively represented as 1). Thus, the LF-relevant relation is set up between the main-clause subject and the D-bound. The Lexicalization Rule (67) forces the appearance of the reflexive form at Spell-Out, as $[_{[\hat{}\phi 1]}$ D] adjoined to matrix v/T is locally c-commanded by the antecedent NP, sharing ϕ-features with it:



I am now left with the last of the four interpretive options available for (76): the subject of the main clause functions as antecedent for the pronominal possessive. This interpretation requires a seemingly impossible combination of conditions within the system under discussion; on the one hand, the very local Agree relation valuing the ϕ-features on $[_{[*\phi]}$ D] requires that the upward Agree be delayed until after the movement of $[_{[*\phi]}$ D] to matrix v/T, but on the other hand, such movement predicts that the only available lexicalized form of the D-bound/Index should be reflexive:



The contradictory requirements of the LF- and PF-licensing of the referentially dependent form in (80) can be solved when the PMC is considered again from the perspective of $[_{[*\phi]}$ D] adjoined to embedded T. There is one local operation that legitimizes the non-local upward Agree between its ϕ-features and *Maria*$_1$: a local relation of control, based on Agree (Landau 2000), which spans the boundary of the infinitive and reaches T across the chain of (*Piotr*$_2$ > PRO$_2$). It opens up the possibility that a longer relation can proceed unobstructed in its wake within the same domain. Thus, upward Agree for the ϕ-features of $[_{[\wedge\phi 1]}$ D] reaches across PRO$_2$ and *Piotr*$_2$ and accesses *Maria*$_1$ in [Spec, vP] in the main clause. For this option to be feasible, the ϕ-features of $[_{[*\phi]}$ D] need to be allowed to postpone their valuation as much as possible within a given derivational cycle. This seems to be independently confirmed; the domain including the main-clause verb and the infinitive in Polish can be transferred and spelled out jointly, due to some phase-extension strategy; for

instance, negation on the main-clause verb causes Genitive of Negation (GoN) on the object of the infinitive (see, e.g., Błaszczak 2001 and Ruda 2018).[46]

The four derivations detailed in (77–80) account for the four-way set of indexical dependencies seen in (76):[47]

Table 1. Indexical dependencies in (76)

Antecedent	Reflexive possessive	Pronominal possessive
Piotr	ex. 77	ex. 78
Maria	ex. 79	ex. 80

The derivations presented in (77–80) seem to meet the rigors of phase-based syntax, outlined in Chomsky 2000, 2001. Despite the movement of $[_{[*\phi]}$ D] from

[46] Consider this example of (extra) Long-Distance GoN from Ruda 2018, after Przepiórkowski 2000, in which the nominal object is multiply embedded in infinitival structures; clausal negation in the main clause forces genitive on the object at the bottom of a cascade of infinitives:

(i) Nie musisz zamierzać przestać studiować algebry.
not $must_{2SG}$ $intend_{INF}$ $stop_{INF}$ $study_{INF}$ $algebra_{GEN}$
'You don't have to intend to stop studying algebra.'

[47] Limits of this contribution do not allow me to extend this system to binding within nominal phrases. Yet, Witkoś (2021b) shows how a combination of Agree, covert movement (both phrasal, similar to the Left Branch Extraction, and CL/WP-like), and PMC, similar to the analysis of all the interpretations in Table 1, derive the four options in (i):

(i) Jan_1 czytał [książkę $Marii_2$ o $swoim_{1,2}$ ojcu /o jej_2 ojcu/
Jan read $book_{ACC}$ $Maria_{GEN}$ about self's father about her father
o $jego_1$ ojcu].
about his father
'Jan read Maria's book about her father/his father.'

Jan can be coindexed with both a reflexive and a pronominal possessor, and Maria can also be coindexed with the reflexive and the pronominal possessor:

(ii) a. Jan_1 → $swoim_1$/$jego_1$
b. $Marii_2$ → $swoim_2$/jej_2

The analysis is based on the following structure of the nominal phrase, where FP is the maximal nominal projection, serving as a derivational phase, in line with Bošković 2012, and the NP overtly moves to [Spec, FP], following an escape movement of the PP (not indicated here for clarity of presentation):

(iii) $[_{FP}$ książka F $[_{PossP}$ [Marii] Poss $[_{NP}$ książka $[_{PP}$ o swoim ojcu]]]]
book $Maria_{GEN}$ book about self's father
'Maria's book about her father'

the T-adjoined position in the infinitive to the v head in the main clause or upward Agree from this position across CP_{INF}, this maximal projection is frequently taken to be more transparent than finite CP. For instance, Landau (2000) takes CP_{INF} not to be a phase in the context of his Agree-based control theory, and Zubkov (2018) does not take either CP_{INF} or vP to be phases in the context of his Agree-based theory of binding. A recent proposal in the spirit of restructuring/reanalysis of infinitive complements resulting in the removal of the CP projection is formulated by Müller (2017, 2018), who submits that syntax needs to be enriched with operation Remove, a mirror reflection of Merge.[48] Last but not least, Bošković (2007) submits that Agree is not limited by the Phase Impenetrability Condition (PIC) to search for potential goals and can transgress phase boundaries.[49] Reflexive possessives in the examples above are accessible to NP-external antecedents, because they are placed at the edge of the nominal phase.[50]

[48] Müller's Remove alters already-constructed phrase markers in a regular manner. It is cyclic, feature-driven (in the case that a CP projection is removed, relevant features rest on the V-head that selects it), and affects either maximal projections or heads. In the former case, both the head and all its projections disappear; in the latter, dependents of C re-associate with the selecting V (as specifiers), and TP becomes V's complement. The consequence of C (and CP) removal from (77–80) is reanalysis of a biclausal structure as a monoclausal context in which upward probing by ϕ-features of $[_{[*\phi]}$ D] can proceed freely.

[49] Bošković (2007: 613–64) assumes that the PIC constrains Move but does not constrain Agree. He points to Chukchee, where agreement reaches into finite CP, violating the PIC:

(i) ənən qəlγilu ləŋərkə-nin-et iŋqun Ø-rətəmŋəv-nen-at qora-t.
he regrets-3-PL that 3SG-lost-3-PL reindeer-PL
'He regrets that he lost the reindeer.'

[50] Having said that, reflexive possessives can be embedded quite deep in Polish. Marciniak (1999: 131) brings up the following example:

(i) Jan_i pokazał $Piotrowi_j$ [dom [córki [brata [$swojego_{i/*j}$/$jego_{*i/j}$
John showed Peter house of.daughter of.brother self's his
kolegi]]]]]
colleague
'John showed Peter the house of a daughter of a brother of his colleague.'

Example (i) is challenging to any theory involving movement, because the launch site is embedded deep in a number of NP projections. Here, a mitigating element concerns performance factors; native speakers I have consulted tend to disagree with Marciniak's original judgments given for example (i) in the sense that they also accept the pronominal possessor coindexed with the subject *Jan*. This indicates that the depth of embedding nullifies the effects of both Binding Condition A and Binding Condition B. I leave this issue for further research.

6. Conclusions

The key feature of this technical account of both subject orientation of reflexives and the spell-out pattern of indexically dependent reflexive and pronominal possessives consists in (i) positing late lexicalization of the D-bound/Index in the derivation (Nikolaeva 2014; Safir 2014), according to the Lexicalization Rule in (67), and (ii) positing features that drive its derivation: the interpretable but unvalued ϕ-features that probe upwards seeking an antecedent (Hicks 2009) and a [−val, person] feature shared with and attracted by the nearest relevant head v/T (Béjar and Rezac 2009; Franks 2017).

The account presented here draws from two minimalist, index-free approaches, one based on Agree (Reuland 2011) and the other based on Move (Boeckx et al. 2008). These two original sources of inspiration require modification. Reuland's Agree-based account straightforwardly covers only constructions in which both the binder and the bindee bear structural cases, as it relies on an extended notion of ϕ-feature sharing between T, v, the subject, and the object (a residue of the General Condition on A-chains in Reinhart and Reuland 1993). Therefore, it requires non-trivial modifications when either the binder or the bindee bears inherent/quirky case. By following the idea expressed in Hicks 2009 that binding is upward Agree, I avoid problematic aspects of the correlation between structural case and binding. Yet, there is a price to pay: I rely on Agree that is specifically tuned to cater to A-binding only (just like proposals developed in Rooryck and Vanden Wyngaerd 2011, Zubkov 2018, and Antonenko 2012, partly inspired by Reuland's theory). Otherwise, the proposal developed here converges with Reuland's on a number of points. I admit that local binding between co-arguments does not allow for any free variation—e.g., (9a) vs. (9b)—which confirms a special role played by the notion of the reflexive predicate. Both Reuland's account and the one here postulate covert raising of the object reflexive out of VP to the domain of v; see (20) and (72). I also rely on the correlation between phase-edge phenomena and reflexive possessives observed by Reuland and explored in Despić 2015.

There are at least two conclusions common to the Movement Theory of Reflexivization (MTR) and this approach: one concerns the role of syntactic movement, and the other Late Spell-Out. The MTR takes the movement of the antecedent (binder) as the core of the binding relation, fully respecting the Inclusiveness Condition (Chomsky 1995) and replacing the Agree relation. The antecedent and the bindee do not exist as two separate objects in the numeration; applications of Copy and Merge form the A-chain and result in a specific lexicalization pattern of copies. The account presented here also provides for movement, but it is assumed that the antecedent (binder) and the bindee (the D-bound) exist as independent syntactic objects, as in Franks 2021, and they must be involved in the Agree operation for ϕ-features. They both move inde-

pendently, with the D-bound raised as CL/WP out of VP and adjoined to v/T. This movement determines lexicalization options of the D-bound; see (67). As both approaches envisage movement as a crucial factor, they rely on constraints on movement to provide for expected binding domains (CL/WP cannot leave CP_{FIN}, so Polish anaphors must observe the TSC). Both approaches take reflexives to constitute spell-out forms of the most optimal relation of A-binding. For MTR, the reflexive marks a copy of the binder left behind by movement. In my account, it overtly reflects a "fully baked" reflexive relation, holding both at LF (where the D-bound's ϕ-features upward-Agree with its antecedent) and at PF (where the D-bound is adjoined to a head whose specifier position is occupied by its LF-antecedent). In MTR the pronoun is seen as a Last Resort resumptive placeholder for a relation of coindexation. According to Hornstein (2001), it marks a failed attempt at movement. Within the approach advocated here, a proximate pronoun (a pronominal possessive) is in fact a "half-baked" reflexive. It is involved in the LF-relevant aspect of the binding relation (its ϕ-features are valued against the antecedent), but it is adjoined to a head whose specifier position is not occupied by its antecedent, so the other half of a successful lexical reflection of the binding relation is missing. Yet, there are also profound differences between the two accounts, as I believe that MTR faces a number of challenges in Polish. One is subject orientation and the way this phenomenon can be encoded in the movement procedure. It must be different for control and reflexivization, as Willim (1982) and Chomsky and Lasnik (1993) point out: Polish allows for object control, but it does not allow for A-binding by objects. At the same time, a Move-based theory of both relations is welcome for English, where the object participates as antecedent in both dependencies. Another challenge for MTR concerns DAT OEs: how do we explain that a DAT OE can have its copy spelled out as either a reflexive possessive or a pronominal possessive, with identical interpretations? The same question applies in the case of long-distance reflexivization.

My account predicts that the difference between languages in which the object can function as antecedent for reflexives and those showing subject orientation depends on the VP-internal vs. VP-external position of the reflexive. I assume that the D-bound in English remains in VP, without moving (wholly or partially) to v/T. Generally, the position where the LF-relevant antecedent/bindee relation is established matches the position where this relation is lexicalized on the bindee in PF.

This account relies on the notion of competition between forms, but sometimes they remain in free variation; see (9b) with DAT OEs. Safir (2004: 360) proposes three alternatives to deal with non-complementary distribution:

(81) Strategies for apparent non-complementarity of distribution:
   a. Interpretations are distinct.
   b. Forms tie on the most dependent scale.
   c. There are distinct numerations (apart from the target).

It appears that the interpretations in (9b) are non-distinct, as they both support bound variable readings and sloppy identity. Still, the reflexive form is preferred whenever possible, with the pronouns coming in as the second-best selection when the reflexive form is unavailable (see the model use of reflexives with subject binders). The only option left is the difference in the numerations as the source of the non-complementarity. Such a difference in the numerations can be credited to the distinct feature composition of v and T. Technically, if T bears the [–val, person] feature relevant for the Index/D-bound raising, it forces its movement to T (and lexicalization as pronominal, in line with (67)). If it does not bear this feature, the Index does not rise to T but remains at v (and is lexicalized as reflexive, according to (67)). The same factor can account for related cases in infinitives showing object control, discussed in connection with (77–80) above. In sum, A-binding appears to result from a conspiracy of principles and processes in which Agree, Move, and Late Spell-Out play significant roles.

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Reviews

P. V. Graščenkov. *Grammatika prilagatel'nogo: Tipologija ad''jektivnosti i atributivnosti* [Grammar of the adjective: Typology of adjectivity and attributivity]. Moscow: Izdatel'skij dom JaSK, 2018. 432 pp.

Reviewed by Egor Tsedryk

1. Introduction

It seems inconceivable to describe syntactic properties of a given language without reference to parts of speech (noun, verb, adjective, adverb, preposition, and so on). They are inherited from traditional grammars of well-known languages and are usually taken for granted. Nonetheless, one may wonder whether or not they are universal and how languages encode them in their systems. Focusing on the adjective, Graščenkov (hereafter: G) in his book scrutinizes the morphosyntactic properties of this category from a crosslinguistic perspective, with Russian being the most representative (in addition to being the language of the book). As the author points out from the outset, Russian embraces a large "zone of grammatical phenomena typologically related to adjectives" (p. 10).[1] Nevertheless, the reader avid for crosslinguistic data will find a wealth of examples from many other typologically unrelated languages; next to Russian, these are Ossetic, Altaic, and Nakh-Daghestanian languages. Overall, the book covers an impressive array of languages, listed at the end of the book (pp. 427–29), with a total of 73 tokens. It is clear that such a volume of data is impossible to cover without the use of secondary sources, but the author also reports data collected during his own fieldwork, including expeditions dating back to his work under the supervision of Aleksandr Evgenievič Kibrik. In the preface, the author acknowledges Kibrik's influence on his broader typological view of adjectives. He also mentions Ekaterina Anatolievna Lyutikova, who influenced his choice of syntax as a main field of interest. In fact, G's keenness for syntactic analysis emerges through the book (selected structures from chapters 2 and 3 will be presented in sections 2.2

[1] As the book is written in Russian, I provide direct quotes in English based on my own translation.

and 2.3). The book has four chapters, which I will report on sequentially in §2. Starting from chapter 2, the material presented in the book is quite dense (and sometimes it goes beyond the realm of adjectives in their strict understanding). For this reason, I have to limit myself to selected highlights. For expository purposes, I will mostly focus on Russian, with only a couple of examples taken from Altaic and Nakh-Daghestanian languages (see §2.4). In §3 I revisit the extended projections that G proposes for the adjectives in Russian, and I briefly conclude in §4.

2. Summary

2.1. Chapter 1

The book starts with an overview of approaches to parts of speech, presenting both functionalist and generativist perspectives (e.g., Croft 1991; Baker 2003) and incorporating insights from the Russian philological tradition, including works of Peškovskij and Ščerba. Seeking a broad definition of a part of speech, G relies on the concept of markedness, as it is used in typological studies (understood as the presence of formal markers when a lexical category is to fulfill a function). More precisely, he defines a part of speech as "a derivationally unmarked distributional class with a specific set of grammatical categories in a given language" (p. 34). Furthermore, zooming in on the adjectives, he singles out attributivity as a distinctive distributive class. In fact, the key message of this chapter (and of the entire book) is that adjectivity and attributivity should be differentiated on a categorial level. Attributivity is a universal function, encoded in a syntactic head, labeled as A, while adjectivity can be realized as a language-specific adjectival category (prominent in European languages) or it can be part of the verbal category (in languages of Southeast Asia). From the terminological point of view, *prilagatel'noe* in Russian (commonly translated as "adjective") includes both *ad"jektiv* (adjective in its language-specific sense) and *atributiv* (a more general attributive function). The former forms a subset of the latter, and hence the following implicational generalization holds: the existence of the adjectival category in a language implies the existence of the attributive function, but not vice versa. That is, adjectives are universal to the extent to which A is a universal category.

In some languages, A is manifested as a marker that can turn a range of phrasal elements into an attributive nominal modifier. Tsakhur and Mandarin Chinese are mentioned as such languages in chapter 1. Thus, G takes *de* in Mandarin Chinese as an attributive marker (i.e., exponent of A), which can make a prenominal modifier out of nominal, adjectival, prepositional, and

clausal phrases.[2] In languages like Russian, which have productive adjectival morphology, A usually selects an adjectival category, but selection of an NP is also possible in the case of the so-called "genitive of quality" (see §2.4). As G points out, Russian encodes adjectivity and attributivity at the level of morphology by *n*- and *sk*-suffixation, respectively:

(1) a. čeloveč-n-yj
human-ADJ-M.SG.NOM
'human'

b. predstavitel'-n-yj
representative-ADJ-M.SG.NOM
'representative'

c. romantič-n-yj
romantic-ADJ-M.SG.NOM
'romantic'

d. specifič-n-yj
specific-ADJ-M.SG.NOM
'specific'

(2) a. čeloveče-sk-ij
human-ATTR-M.SG.NOM
'human' (proper to humanity)

b. predstavitel'-sk-ij
representative-ATTR-M.SG.NOM
'representative'

c. romantiče-sk-ij
romantic-ATTR-M.SG.NOM
'romantic'

d. specifiče-sk-ij
specific-ATTR-M.SG.NOM
'specific'

(selected examples from G's (53), p. 51)

The semantic contrast between these two types of word formation is not always transparent, but there is a list of properties characterizing the *n*-suffixation, as opposed to the *sk*-suffixation. For example, the adjectival derivation (but not the attributive one) allows the formation of a short form (*čelovečen* 'human' vs. **čelovečesk*), a comparative form (*čelovečnee* 'more human' vs. **čelovečeskee*), and abstract nouns (*čelovečnost'* 'humanity' vs. **čelovečeskost'*), among other distinctive properties.

Interestingly, G claims that the stems selected by A can be either attributive or adjectival. In this regard, he deviates from the framework of Distributed Morphology, in which the roots are assumed to be category-neutral. However, I am not entirely convinced how far this deviation is warranted, since G mostly discusses the categorial status of the stems, which are arguably not the smallest morphological units. If A is a universal head that has an independent categorial status (i.e., it signals attributivity), it should be able to categorize roots as well as larger structural units.

[2] The categorial status of *de* in Mandarin Chinese is notoriously hard to define. One of the options found in the literature is a complementizer analysis of *de* (e.g., see Cheng 1986; Xu 1997).

2.2. Chapter 2

Chapter 2 spans over 144 pages and could easily be expanded into a separate monograph. It brings up a range of phenomena and issues related to adjectives, including their hierarchical order in the nominal spine, attributive and predicative occurrences, prenominal and postnominal positions, long and short forms, comparative structures, depictive secondary predicates, and left-dislocated appositives. Adjectives are analyzed as lexical items capable of projecting their own argument structure, extended by functional projections. These projections determine the morphosyntactic shape of the whole adjectival structure and its occurrence within a clause (e.g., attributive vs. predicative).

For the sake of illustration, let me outline G's analysis of the long/short-form dichotomy in Russian, going now into certain technical details. This dichotomy received a fair amount of attention in the literature, going back to Babby 1973 and, more recently, Babby 2009, Geist 2010, and Borik 2014, among others. For a quick overview of data, consider (3) and (4) below (examples are mine).[3] The long form in (3) bears a case value (along with gender and number) and it can be attributive, (3a–b), or be used as a clausal predicate, (3c). The short form in (4) does not have case;[4] it cannot be attributive, (4a–b); and it occurs only as a clausal predicate, (4c).[5]

(3) a. (v dom zašla) krasivaja devuška
(into house entered) beautiful$_{F.SG.NOM}$ girl$_{F.SG.NOM}$
'a beautiful girl (entered into the house)'

b. (ja vižu) krasivuju devušku
(I see) beautiful$_{F.SG.ACC}$ girl$_{F.SG.ACC}$
'(I see) a beautiful girl'

c. Ona byla krasivaja /krasivoj.
she was beautiful$_{F.SG.NOM}$ /beautiful$_{F.SG.INSTR}$
'She was beautiful.'

(4) a. (v dom zašla) *krasiva devuška
(into house entered) beautiful$_{F.SG.NOM}$ girl$_{F.SG.NOM}$
Intended: 'a beautiful girl (entered into the house)'

[3] When no reference is provided, the example is mine.

[4] A putative accusative form is used in (4b). Also, the case is glossed in (4a) only for expository purposes.

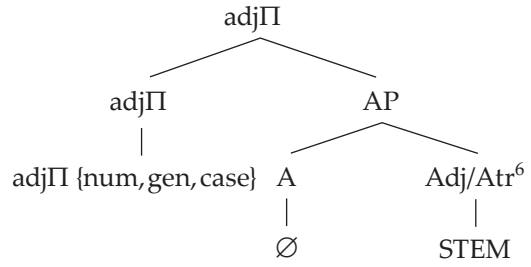
[5] There are expressions like *krasna devica* 'beautiful girl' (involving a short form), but they are archaic and not productive in Modern Russian.

(4) b. (ja vižu) *krasivu devušku
(I see) beautiful$_{F.SG.ACC}$ girl$_{F.SG.ACC}$
Intended: '(I see) a beautiful girl'

c. Ona byla krasiva.
she was beautiful$_{F.SG}$
'She was beautiful.'

According to G, the long form has the structure in (5), in which the attributive head A selects either an adjectival or an inherently attributive stem. The inflectional category on the top encodes number, gender, and case (the Cyrillic letter *П* stands for *polnaja* 'full', as in *polnaja forma prilagatel'nogo* 'full/long form of adjective').

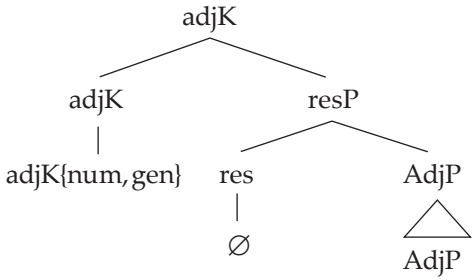
(5)



(G's (190), p. 131)

The short form, on the other hand, has the structure in (6). A resultative head selects an adjectival phrase, and the inflectional head on the top encodes only number and gender—no case (the Cyrillic letter *K* stands for *kratkaja* 'short', as in *kratkaja forma prilagatel'nogo* 'short form of adjective').[7]

(6)



(G's (191), p. 133)

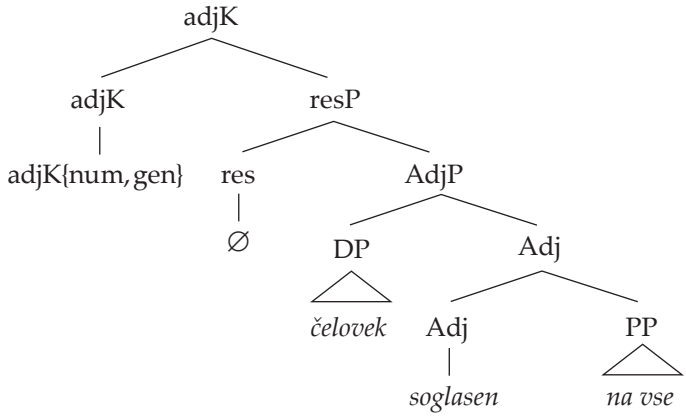
[6] G uses "Atr" (with a single "t"), based on the transliteration of the Russian word *atributiv* 'attributive'.

[7] For some reason, G refers to STEM in (5), but not in (6). As it becomes clear from further discussion related to depictive secondary predicates, A can also take AdjP as its complement (e.g., see G's (248), p. 162)

To motivate the structure in (6), G draws a parallel between the short form of adjectives and the passive participles, arguing that both denote a final state. Furthermore, he admits that AdjP can have an internal logical subject. Thus, the subject of the clause in (7a) is introduced in the specifier position of AdjP, as shown in (7b). It would subsequently raise to the clausal subject position (Spec, TP), once T takes adjK as its complement (but see §3.2 for an alternative analysis).

(7) a. Čelovek soglasen na vse.
person$_{M.SG.NOM}$ agree$_{ADJ.M.SG}$ on everything
'A person/human being is agreeable to everything.'

b.



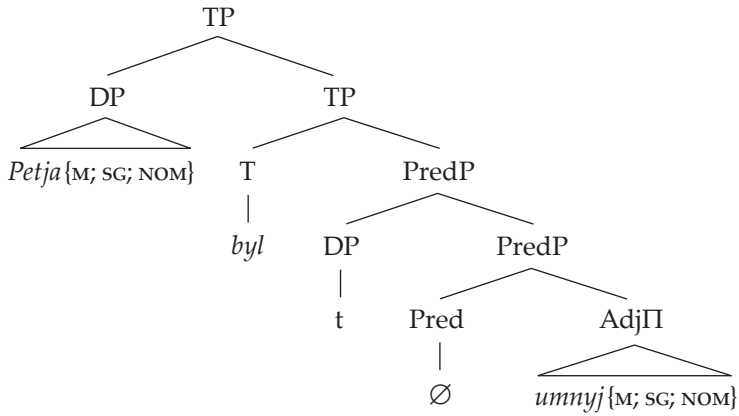
(G's (221), p. 146)

As for (5), G resorts to an additional predicative head (Pred) to introduce the external argument. Thus, for a sentence like (8a), he proposes the structure in (8b).[8] Note that the example below features a nominative adjective.

(8) a. Petja byl umnyj.
Petja$_{M.SG.NOM}$ was smart$_{M.SG.NOM}$
'Petja was smart.'

[8] "AdjП" and "adjП" are the same labels; this is just an editorial glitch. I keep the structures as they appear in the book.

(8) b.



(G's (226), p. 151)

An immediate question arises: Why can the DP not be base-generated within AdjP (embedded in AdjП, as we know it from the structure in (5))? G simply stipulates that this derivation would be impossible because PredP is a phase. The phasehood of PredP precludes the DP from moving out of the domain of Pred (see G's (227), p. 153).[9] At the same time, he claims that after the DP moves to Spec, TP, the subject's features (case, number, and gender) are percolated downward to AdjП (across the phase). This is a contradiction: feature sharing (however it is formalized) is one of the operations that cannot happen across a phase boundary.

The above problem would be avoided if the pattern with the nominative case, as in (8b), did not involve PredP at all. In fact, G does not use PredP in his analysis of secondary predication instances that feature case agreement. For example, consider (9a), as opposed to (9b) with the instrumental case marking (standardly attributable to the Pred head).

(9) a. Petja prišel domoj [$_{\text{adjП}}$ p'janyj].
Petja$_{M.SG.NOM}$ came home drunk$_{M.SG.NOM}$
'Petja came home drunk.'

b. Petja prišel domoj [$_{\text{PredP}}$ p'janym].
Petja$_{M.SG.NOM}$ came home drunk$_{M.SG.INSTR}$
'Petja came home drunk.'

[9] G seems to assume in this particular case the condition in (i), but he does not state it explicitly.

(i) Phase-Impenetrability Condition (Chomsky 2000: 108)
In a phase α with head H, the domain of H is not accessible to operations outside α, only H and its edge are accessible to such operations.

Under G's account, the DP *Petja* in (9a) is base-generated inside AdjП—more precisely, within AdjP—and then it moves to a subject position, passing by a VP-internal theta-position, as shown in (10) (cf. his structure in (228), p. 162).[10]

(10) $[_{TP}$ Petja $[_{VP}$ $[_{VP}$ ⟨Petja⟩ prišel] $[_{adjП}$ $[_{AP}$ $[_{AdjP}$ ⟨Petja⟩ p'janyj]]]]]

In the last section of chapter 2 (§2.4), G discusses comparative structures. After reviewing previous analyses (e.g., Matushansky 2002, 2013; Ionin and Matushansky 2013), he offers his own account. He suggests that a bare AdjP can be dominated by a degree phrase (DegP), but an attributive structure, as in (5), cannot. The latter option can only lead to an analytical comparative (e.g., *bolee krasiv-yj* 'more beautiful-M.NOM'), while the former option would derive a morphological comparative (e.g., *krasiv-* 'beautiful-' → *krasiv-ee* 'beautiful-DEG').

2.3. Chapter 3

One of the key messages of this chapter is that adjectives are able to project their own argument structure, which is comparable to that of verbs, with one crucial difference: adjectives are unable to assign structural accusative case. This chapter is mostly descriptive, with some elements of dependency grammars (as developed by Mel'čuk, Apresjan, and others). Overall, it provides a very good reference for researchers interested in lexical semantics. The chapter is divided into two sections: the first one focuses on adjectival classes in Russian, while the second deals with complex predicates in Ossetic, using Ramchand's (2008) theory of argument structure. The second section is more about the verbal structures built on top of an adjective-like root. In what follows, my focus will be on the first section of chapter 3.

G distinguishes nine semantic classes of adjectives (enumerated below) and delves into a thorough description of the complements they can take.

(11) a. EVALUATIVE

važnyj 'important', *vtorostepennyj* 'secondary', *gadkij* 'nasty, ugly', *dorogoj* 'dear', *žutkij* 'scary', *zabavnyj* 'entertaining', *zagadočnyj* 'mysterious', *zamančivyj* 'tempting', *zanjatnyj* 'amusing', *zarazitel'nyj* 'contagious', *interesnyj* 'interesting', *omerzitel'nyj* 'disgusting', *otvratitel'nyj* 'disgusting, heinous', *skučnyj* 'boring', *udačnyj* 'lucky', …

[10] G assumes sideward movement (Nunes 2004) and Hornstein's (2001) Movement Theory of Control.

(11) b. TEMPORAL

dolgij 'long, lingering', *kratkij* 'short', *novyj* 'new', *staryj* 'old'

c. SPATIAL

bližnij 'near, neighboring', *blizkij* 'near, close', *dalekij* 'far', *dal'nij* 'further'

d. IDENTITY

ženatyj 'married', *identičnyj* 'identical', *odinakovyj* 'same', *parallel'nyj* 'parallel', *poxožij* 'similar, resembling', *ravnyj* 'equal', *različnyj* 'different', *raznyj* 'different', *sxožij* 'similar', *toždestvennyj* 'identical, selfsame', *ekvivalentnyj* 'equivalent'

e. EMOTIONAL ATTITUDE

agressivnyj 'aggressive', *bezrazličnyj* 'indifferent', *bespristrastnyj* 'impartial', *blagoželatel'nyj* 'benevolent', *vežlivyj* 'polite', *vnimatel'nyj* 'polite, attentive', *vraždebnyj* 'hostile', *gostepriimnyj* 'hospitable', *grubyj* 'rude', *dobroželatel'nyj* 'benevolent, well-wishing', *dobryj* 'kind', *druželjubnyj* 'friendly', *zabotlivyj* 'caring', *zloj* 'evil', *miloserdnyj* 'merciful', …

d. BENEFACTIVE

vrednyj 'harmful', *vygodnyj* 'favorable', *opasnyj* 'dangerous', *poleznyj* 'useful', *udobnyj* 'convenient', *cennyj* 'valuable', *črevatyj* 'fraught'

e. NOTORIETY

znakomyj 'familiar', *znamenityj* 'famous', *izvestnyj* 'known', *populjarnyj* 'popular', *proslavlennyj* 'glorified'

f. TYPICALITY

obyknovennyj 'ordinary', *obyčnyj* 'ordinary', *privyčnyj* 'habitual', *svojstvennyj* 'characteristic, inherent, proper', *tipičnyj* 'typical', *xarakternyj* 'characteristic', …

g. CONTENTFUL

bogatyj 'rich', *bednyj* 'poor', *polnyj* 'full', *pustoj* 'empty'

(G's (425), p. 222)

For each class of adjectives, there is a characteristic set of semantic roles. For example, spatial adjectives can introduce a reference point, (12a); evaluative adjectives can take a beneficiary, (12b); adjectives of emotional attitude may select an addressee, (12c); adjectives of identity can have a co-participant[11],

[11] G uses the term *kontragent*, which he defines as a non-agentive participant complementing the adjective in addition to the clausal subject (p. 228).

(12d); and so on. Note that, in most cases, these semantic roles are expressed by specific prepositions, but they can also be associated with a specific case marking (without an overt preposition), as in (12e–g).

(12) a. dalekij ot nas gorod
far$_{M.SG.NOM}$ from us$_{GEN}$ town$_{M.SG.NOM}$
Lit.: 'a far-from-us town'

b. važnoe dlja nix putešestvie
important$_{N.SG.NOM}$ for them$_{ACC}$ trip$_{N.SG.NOM}$
'a person important to them'

c. dobroželatel'nyj k svoim učenikam učitel'
well.wishing$_{M.SG.NOM}$ towards his$_{DAT}$ pupils$_{DAT}$ teacher$_{M.SG.NOM}$
Lit.: 'a well-wishing-towards-his-pupils teacher'

d. poxožaja na menja doč'
resembling$_{F.SG.NOM}$ on me$_{ACC}$ daughter$_{F.SG.NOM}$
Lit.: 'a resembling-to-me daughter'

e. blizkij mne čelovek
close$_{M.SG.NOM}$ me$_{DAT}$ person$_{M.SG.NOM}$
Lit.: 'a close-to-me person'

f. svojstvennoe emu povedenie
characteristic$_{N.SG.NOM}$ him$_{DAT}$ behavior$_{N.SG.NOM}$
Lit.: 'a characteristic-of-him behavior'

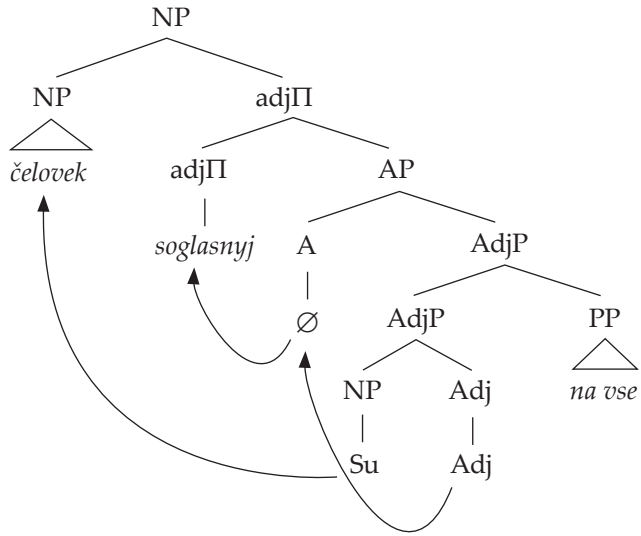
g. bogatyj istoriej gorod
rich$_{M.SG.NOM}$ news$_{INSTR}$ day$_{M.SG.NOM}$
'a town rich in history'

As can be seen, the adjective phrase (Adj + its complement) is linearized to the left of the noun. G reports that this pattern is also observed in Kyrgyz, German, Swedish, and Polish, but not in the Romance languages (see pp. 258–59). As far as Russian is concerned, G derives the N-final word order by moving the whole adjective phrase leftward. Let us first see how the N-initial word order, (13a), would be derived. The relevant derivational steps are shown in (13b), where "Su" below NP stands for the subject of a small clause (this is G's original notation).

(13) a. | | | |
|---|---|---|
| čelovek | soglasnyj | na vse |
| person$_{M.SG.NOM}$ | agreeing$_{M.SG.NOM}$ | on everything |

'a person agreeing with everything'

b.



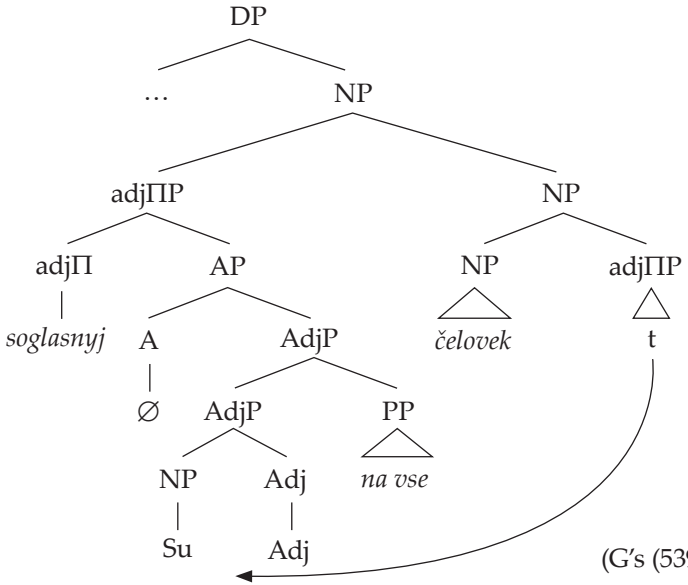
(G's (536), p. 270)

It is not clear to me why the PP is base-generated as a right-adjunction to AdjP, while in chapter 2 it was presented as a complement of the head (cf. the structure in (7b)). Also, it is not clear why the moving NP projects in its landing site. Be it as it may, G takes the structure in (13b) as an input for the structure in (14b) to derive a noun-final string in (14a). In (14b) the adjΠ phrase moves to an NP-adjoined position.

(14) a. | | | |
|---|---|---|
| soglasnyj | na vse | čelovek |
| agreeable$_{M.SG.NOM}$ | on everything | person$_{M.SG.NOM}$ |

'a person agreeable with everything'

(14) b.



(G's (539), p. 271)

Why do we need all these movements to derive the attributive modification, which could just be a matter of a single application of Merge (the adjectival phrase with all its arguments is merged with the modified NP)? As far as I can see, nothing motivates the derivational complexity depicted in (13b) and (14b). See §3 for an alternative.

2.4. Chapter 4

In addition to Russian, chapter 4 presents data from Altaic and Nakh-Daghestanian languages to show that the assumed attributive head can occur with constituents of different sizes, X or XP. As G puts it, "functional head A […] operates between lexicon and syntax" (p. 331).

Thus, the following data from Komi (Altaic family) shows that an attributive head can be attached to a phrasal constituent.[12] The attributive in (15a) resembles an adjectival compound in Russian (cf. *sineglazyj* 'blue-eyed'), but the subsequent example in (15b) shows that the nominal within the attributive phrase can be plural, which is impossible in Russian compounds (but see (i) in fn. 13).

(15) a. Me radejtli [löz sinm]-a nylös.
I loved [blue eye]-ATTR girl
'I loved a blue-eyed girl.' (Komi; G's (643), p. 332)

[12] The Latin transliteration of the examples in (15–17) is based on the Russian transliteration provided by G.

(15) b. löz sinjas-a pilot
blue eye.PL-ATTR pilot
'a blue-eyed pilot' (Komi; G's (644), p. 333)

According to G, comitative and caritive (privative) markers are also instances of the same attributive head, as in the following examples from Mishar (Tatar). Note that the comitative and caritive are glossed alike.

(16) a. [zeŋger küz]-le kɣz
blue eye-ATTR girl
'blue-eyed girl'

b. [zur jɣrt]-sɣz awɣl
big house-ATTR village
'village without big houses' (lit.: 'big-house-less village')
(Mishar; G's (664), p. 338)

G also reports interesting data from the Bagwalin language (Nakh-Daghestanian family), in which an attribute can be expressed in two ways: (i) as a genitive-marked NP, (17a), or (ii) as an adjectival phrase agreeing with the modified noun head, (17b). Note that the adjective hosts two clitics: the proclitic carries the agreement features of the modifier-internal noun in (17b), and the enclitic carries the features of the modified noun. In (17a) both the proclitic and enclitic carry the features of the modified noun in genitive case.

(17) a. r=eč'at'u=r mica-ł jaš
N.PL=black=N.PL hair.PL-GEN girl
'black-haired girl' (lit.: 'girl of black hair')
(Bagwalin; G's (674a), p. 342)

b. miča r=eč'at'u=j jaš
hair.PL N.PL=black=F girl
'black-haired girl' (Bagwalin; G's (675a), p. 342)

In the last two sections of chapter 4, G discusses adjectival compounds and the genitive of quality (*genetiv kačestva*) in Russian.

To start with compounds, two types of compounds are considered. The first type is based on syntactico-semantic subordination (e.g., *glubokovodnyj* 'deep-water' ~ *glubokaja voda* 'deep water'; *dvuxcvetnyj* 'two-colored' ~ *dva cveta* 'two colors'; *vodoočistitel'nyj* 'water-purifying' ~ *očistit' vodu* 'purify water'). G shows that this type of compounding involves binary branching and does not accept more than one stem. The second type involves a flat (coordinated) structure, which can have more than two stems (e.g., *kislo-sladko-solenyj* 'sour-

sweet-salty'). Both types can co-occur in a single compound, creating the illusion of a subordinate compound with multiple stems (e.g., *vodo-grjaze-ottalki-vajuščij* 'water-dirt-repelling' ~ *ottalkivat' vodu i grjaz'* 'repel water and dirt').

G's discussion of compounds is not free from theoretical inconsistency, as far as his lexicalist position is concerned. On the one hand, he concludes that Russian compounds are formed in the lexicon (p. 377), as opposed to the syntactic formation of the attributives in Altaic and Nakh-Daghestanian languages. At the same time, he resorts to late insertion in order to account for stress patterns in Russian compounds (p. 360). Late insertion is assumed in Distributed Morphology, which is incompatible with any version of lexicalism (i.e., word creation in the lexicon, before syntactic derivation). As for stress distribution, Russian compounds show the following patterns. When a two-stem compound is formed, the stress usually falls on the final syllable of the second stem (excluding the inflection), as in (19). Compare this pattern with the one in (18), where a corresponding non-compound form, featuring the second stem from (20), has the stress falling on the inflection.

(18) One-stem form ($stem_2$)

a. bol'-n-ój
pain-ADJ-M.SG.NOM
'sick'

b. les-n-ój
forest-ADJ-M.SG.NOM
'forest/wooded' (area)

c. voln-ov-ój
wave-ADJ-M.SG.NOM
'wave' (transmitter)

d. vek-ov-ój
century-ADJ-M.SG.NOM
'secular'

(19) Two-stem form ($stem_1$-$stem_2$)

a. serdo-ból'-n-yj
heart-pain-ADJ-M.SG.NOM
'compassionate' (lit.: 'heartsick')

b. melko-lés-n-yj
small-forest-ADJ-M.SG.NOM
'small-forest/lightly-wooded' (area)

c. korotko-voln-óv-yj
short-wave-ADJ-M.SG.NOM
'shortwave' (transmitter)

d. sredne-vek-óv-yj
middle-century-ADJ-M.SG.NOM
'medieval'

(selected examples from G's (712), p. 360)

The above data indicates that the distribution of stress depends on two factors: (i) the type of the inflectional exponent attached to the stem (strong inflection *-ój*, with stress, vs. weak inflection *-yj*, without stress) and (ii) the presence of an additional stem (which in most—but not all—cases correlates with a weak inflection). If the stress is distributed upon vocabulary insertion into the syntactic terminal nodes (i.e., late insertion), both of these factors would be taken care of in the phonological component, after the relevant structure

is created in syntax (we thus can formulate structure-sensitive stress assignment rules). A lexicalist approach would need to stipulate stress assignment in the lexicon independently from the syntactic structure involved, which may lead to a bracketing paradox (that is, stress assignment indicates one structure, whereas syntax indicates another structure). For example, consider the compound in (20a).[13] The stress assignment in (20a) is exactly the same as in a one-stem form, shown in (20b).

(20) a. dvux-vint-ov-ój
two-screw-adj-m.sg.nom
'twin-screw' (propeller)

b. vint-ov-ój
screw-adj-m.sg.nom
'screw' (propeller)

Thus, stress assignment indicates that the strong inflection should be attached before the compound is created, based on the pattern in (18). In other words, the structure predicted from the general pattern of stress assignment is [$stem_1$ [-$stem_2$-suffix]]. However, the compound in (20a) is syntactically related to the NP in (21), implying the structure [[$stem_1$-$stem_2$]-suffix], hence the bracketing paradox.

(21) a. dv-á vint-á
two-m.pl.nom screw-m.pl.nom

b. dv-úx vint-óv
two-pl.gen screw-pl.gen[14]
'two screws'

In (21) I provide two case forms of the same NP. To be more precise, the compound in (20a) is related to the genitive form in (21b) (see fn. 13).

[13] More accurately, the glosses in (20a) could be detailed as follows:

(i) dv-ux-vint-ov-ój
two-pl.gen-screw-pl.gen-sg.m.nom
'twin-screw' (propeller)

Quite interestingly, the numeral stem is clearly in genitive form (cf. (21b)). The suffix *-ov-*, glossed as an adjectival marker in (18–20), seems to be a grammaticalized genitive case marker. The pattern with a numeral in genitive case is proper to compounds with numerals greater than 'one'.

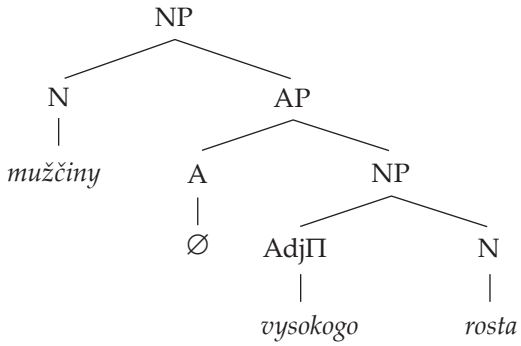
[14] Russian shows gender syncretism in genitive case (hence, no gender specification in the glosses).

As G claims, Russian has a rich derivational morphology, which contributes to the creation of adjectives as a separate attributive class in the lexicon. As he puts it, "Russian went 'far' enough in the development of [a lexical] category adjective" (p. 377). Being mostly lexical, the process of attributive formation has a limited space in syntax, but this does not mean that Russian is fully exempt from syntactic attributives. In the very last section of the chapter, G focuses on what, in his view, constitutes a syntactic instantiation of attributive formation in Russian, namely, the genitive of quality, illustrated in (22) (cf. (17a)). For such cases, he suggests that the head A should take an NP as its complement, as shown in (23b), representing the structure of (23a).

(22) a. dlja detej staršego vozrasta
for kids$_{GEN}$ old$_{GEN}$ age$_{GEN}$
'for older kids' (G's (742a), p. 378)

b. vse èti potrjasajuščej roskoši izdelija
all$_{NOM}$ those$_{NOM}$ stunning$_{GEN}$ luxury$_{GEN}$ crafts$_{NOM}$
'all those crafts of stunning luxury' (G's (755a), p. 383)

(23) a. mužčiny vysokogo rosta
men$_{NOM}$ high$_{GEN}$ height$_{GEN}$
'tall men'

b.


(G's (782), p. 392)

G remains vague with respect to the source of the genitive case for the lower NP in (23b). Just before concluding his last section, he elusively suggests that this NP is an adjunct (even though it is structurally represented as a complement of the A head) and the genitive case in the nominal environment is the same as the accusative case assigned to VP adjuncts (e.g., *ja ee prožd*al *[dva časa]* 'I waited for her$_{ACC}$ [two hours]$_{ACC}$') (p. 394).

3. Discussion

In what follows, I revisit G's analysis of attributive adjectives in Russian. In §3.1 I motivate a structure in which the adjectival stem is split into a root and a categorizing head. In §3.2 I discuss the universal head A and show that the long- and short-form adjectives in Russian are minimally differentiated by the presence (or absence) of a case projection in their extended structure.

3.1. Decomposing the Adjectival Stem

As was pointed out in §2.3, G's (13b) and (14b) have a number of derivational steps that raise the question of their necessity. Other than obtaining the right word order, they do not have independent motivation. Intuitively, the adjectival modification does not seem to need any sophisticated machinery other than a single application of Merge between the NP and its adjectival modifier. At the same time, G oversimplifies the morphosyntactic structure of the adjectives, assuming a lexically prebuilt adjectival stem, which has its own selectional properties in syntax. There is a problem with this type of analysis.

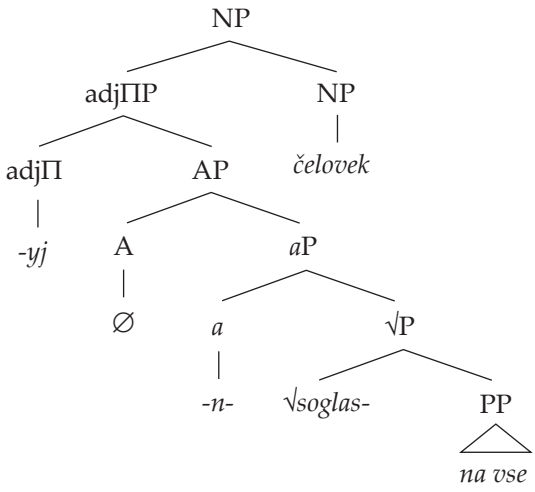
Let us return to the example in (14a), repeated below in (24a). The relevant element here is the PP linearly sandwiched between the adjective and the nominal. In chapter 2, G took this PP to be the complement of the adjectival stem (see the structure in (7b) on p. 334). In chapter 3, he presents it as an adjunct of AdjP (see the structure in (14b) on p. 340). In any case, he associates this PP with the adjectival category as a whole, in line with his theory of adjectival dependents (see §2.3). In (24b) we can see that the same PP appears with a noun that has the same root. It means that the PP is not associated with the adjective as a whole, but with one of its subparts that is not category-specific, namely, the root. In derivational terms, this implies that the merger of this PP is independent of the categorization of the root.

(24) a. soglas-n-yj na vse čelovek
agree-ADJ-M.SG.NOM on everything person$_{M.SG.NOM}$
'a person agreeable to everything'

b. soglas-ie na vse /na brak /na razvod
agree-NMLZ.N.SG.NOM on everything /on marriage /on divorce
'agreement to everything/to marriage/to divorce'

In structural terms, the root is thus expected to form a constituent with the PP prior to its merger with a categorizing head. The corresponding structure, representing (24a), is shown in (25) on the following page.

(25)



If you compare this structure with the one in (5), you will see that the adjectival stem (Adj) is now replaced by a categorizing head (*a*) and the root. For the moment, I leave the other two categories, A and adjΠ, but I will return to them in §3.2. The phonological exponents are shown for the sake of illustration; vocabulary insertion would otherwise take place post-syntactically, after the root cyclically head-moves to adjΠ (passing through *a* and A on its way up).[15]

As for linearization, the pre- or post-nominal occurrence of the attributive phrase can be handled at the interface between the syntax and the phonological form, depending on the constraints imposed by the information structure and, possibly, by the phonological weight of the modifying phrase. There is no need to stipulate multiple syntactic movements to derive the N-initial or N-final word order, as in (13b) and (14b).

In the next section, I propose to relabel the remainder of the tree in (25), questioning the relevance of the null head A. After relabeling the structure in (25), I show that with a minimal set of assumptions the distributional difference between the short- and the long-form adjectives can be derived from Chomsky's (2013) labeling algorithm. More precisely, when two XPs are merged, the structure is labeled either (i) under identity between these two phrases or, if identity is impossible, (ii) under a symmetry-breaking operation, namely, raising.

[15] Whether the root in (25) has a predetermined phonological matrix or is subject to late insertion is orthogonal to the current discussion.

3.2. Case and Agreement in the Extended Adjectival Projection

In order to delve into the question related to labeling of the uppermost node in (25), we need to assess the categories above aP, including the supposedly universal attributive head A.

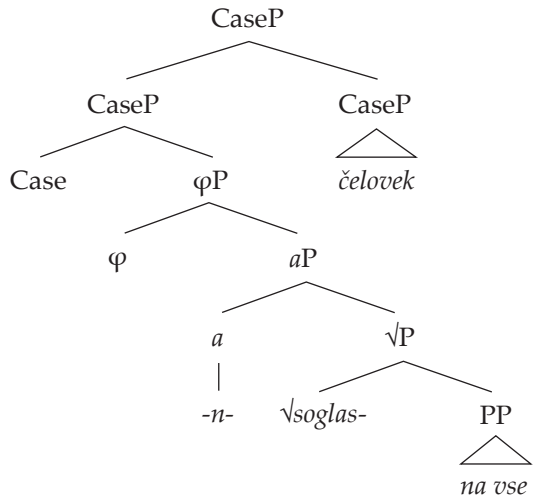
Any universal head has the burden of empirical motivation in specific languages, which may exhibit different forms of multifunctionality (see Wiltschko 2014: ch. 2 for discussion). In languages where the purported head does not have a phonetic realization (in any syntactic contest), this burden is even more pressing. Recall that G divides the adjectival stems into properly adjectival and attributive (see (1–2) on p. 331). At the same time, he admits that any of these stems can be selected by the null head A in syntax, making this head a spurious redundant element (see (5) on p. 333). Moreover, this head requires a set of additional stipulations: it has to be selected by adjП (not by adjK), it cannot be dominated by the degree phrase, it cannot select any other XP but AdjP and NP, etc. In fact, motivating A in Russian is not as straightforward as it may seem, which raises the following methodological questions: Do we actually need it? What is the function of other categories and features in the extended adjectival structure? Note that other languages can have their own heads that fulfill a linking function between a noun and its modifier (e.g., *ezafe* in Iranian and Turkic languages), but it does not mean that such linking elements are ubiquitous.

Independently from the attributive modification, Russian has an elaborated case system. Case is a grammatical category, which has its own function in the language. We can follow Wiltschko (2014: ch. 2) and assume that case is the uppermost category (CaseP)[16] in the nominal spine, fulfilling a linking function—that is, CaseP links the nominal to a structural position within a clause. Likewise, CaseP can be the linking category for adjectives if they are to be used as attributive modifiers. In fact, under the assumption that CaseP is the uppermost projection of a nominal in Russian, it becomes straightforward that attributive adjectives have to bear the same label. It makes them fit for Chomsky's labeling algorithm when two phrases are merged under label identity. In this case, there is no ambiguity for labeling: when two CasePs are merged, CaseP automatically becomes the projected label. Thus, the structure in (25) can now be relabeled as follows:[17]

[16] Wiltschko's (2014) notation is "KP" and "K", but for this review, I am writing "CaseP" and "Case" to avoid confusion with G's use of "K" (as in "adjK", where the Cyrillic "K" stands for *kratkaja* 'short'; see (6) on p. 333).

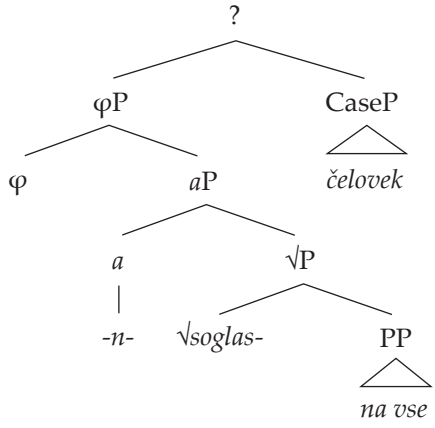
[17] The mere existence of short-form adjectives in Russian indicates that Case and agreement (phi-)features can structurally be split into two categories. That is, peeling off the highest structural layer (CaseP) results in a reduced adjectival structure, shown in (27). Languages can eventually be parameterized as to whether or not Case proj-

(26)



φP is the projection of phi-features (gender and number). The inflectional exponent *-yj* (as in *soglas-n-yj* 'agree-ADJ-M.SG.NOM') would spell out the φ-Case complex created by the cyclic head movement of the root to Case. Correspondingly, the short-form adjective would just be a φP without the Case layer, as in (27) below (see fn. 17).[18]

(27)



ects as a separate category in the adjectival structure or is bundled with agreement features in a single head.

[18] φP in (27) is to be compared with G's structure in (6), which has another null head (res). I am not convinced that a null resultative head is warranted for all short-form adjectives. Adjectives denote properties without necessarily being the final states of events. In other words, a short-form adjective does not entail a resultative state.

Unlike in (26), CaseP cannot project in (27), since there is no identity between CaseP and φP. The only way to label the structure in (27) is to merge a copula and to move CaseP to a higher position. Once CaseP (the nominal) moves, its lower copy becomes irrelevant for labeling, and it is φP (the adjective) that projects (based on Chomsky 2013: 44). We thus predict that the short (Caseless) form of the adjective, as in (27), can only have a predicative occurrence, as in (7a), repeated in (28a) with some modifications. The corresponding structure is shown in (28b).

(28) a. Čelovek (byl) soglasen na vse.
person$_{M.SG.NOM}$ was agree$_{ADJ.M.SG}$ on everything
'A person (was) agreeable to everything.'

b. $[_{TP}\ [_{CaseP}$ Čelovek$]_i$ BE $[_{\varphi P}\ [_{\varphi P}$ soglasen na vse$]\ t_i]]$

All in all, the difference between the long- and the short-form adjectives is derived from a minimal set of assumptions that have independent motivation in the system (i.e., Chomsky's labeling algorithm), coupled with the well-attested category in Russian, assumed to be part of the extended nominal spine (Wiltschko 2014). The A head appears to be a superfluous element in this picture.

4. Conclusion

In his book, G claims that there is a universal attributive head A. This head does not have an overt realization in Russian and appears to be just a mnemonic element in the adjectival extended projection. Introduction of this head, coupled with a predominantly lexicalist view of adjectival morphology, leads to a series of structures with a number of stipulations. After summarizing the main points of G's proposal (§2), I proposed to revisit his structure of attributive (long-form) adjectives in Russian (§3), accounting for distributional differences with respect to their short-form counterparts, as presented in (3) and (4), respectively. The revisited structure requires a minimal set of categories (independently attested in the language) and independently needed assumptions (the labeling algorithm). Notwithstanding the proposed alternative, G's contribution is an impressive volume, which is commendable for its empirical coverage and its comprehensive overview of the issues related to adjectives and other nominal modifiers. It is a valuable reference for anyone interested in comparative syntax and morphology.

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Gréte Dalmi, Jacek Witkoś, and Piotr Cegłowski, eds. *Approaches to Predicative Possession: The View from Slavic and Finno-Ugric*. London/New York/Oxford/New Delhi/Sydney: Bloomsbury Academic, 2020. viii + 228 pp. ISBN 978-1-3500-6246-7 (hardback), 978-1-3500-6249-8 (online), 978-1-3500-6247-4 (epdf)

Reviewed by Ljuba Veselinova

It is widely acknowledged that possession is a universal domain in the sense that all known human languages have conventionalized expressions for it, such as (1) and (2) below (cf. Heine 1997: 2). Like most abstract notions, the domain of possession defies a generally accepted definition. Yet, as pointed out by Stassen (2009: 10–11), most linguists and laymen would agree that the expressions in (1) and (2) illustrate cases of "real"/prototypical possession, while intuitions and views would differ on whether sentences such as (3–6) would count as examples of possession.

(1) Tom has a car.
(2) his car
(3) Frank has a sister.
(4) A spider has six legs.
(5) Mandy has a basket on her lap.
(6) Bill has the flu.

The domain of possession has been construed in terms of judicial ownership, belonging, and spatial proximity. Perhaps one of the most accepted analyses sees possession as a relation between two entities, a POSSESSOR and a POSSESSEE (Langacker 1991; Stassen 2009; Heine 1997). There are authors, such as Miller and Johnson-Laird (1976), who see possession as a social construct; this understanding has been subject to debate. A number of scholars (Seiler 1973; Hagège 1993; Heine 1997; Evans 1995; Stassen 2009, among others) bring up the aspect of CONTROL[1] in the relation POSSESSOR-POSSESSEE. That is, in the prototypical case, the POSSESSOR controls the relation over the POSSESSEE. This, in turn, entails that a prototypical POSSESSOR is a high-ranking animate, usu-

[1] The semantic parameter of control is not to be confused with the syntactic notion of control used in generative grammar.

ally a human, and a prototypical POSSESSEE is an inanimate object, as is the case in the predication shown in (1). Analyses of kinship relations, as well as encodings of body parts versus the body they belong to, as in (3) and (4), bring out aspects of durability and part-whole relations that contribute to the semantic complexity of the domain of possession. Thus, POSSESSEES that can be detached from the POSSESSOR without any physical/other kind of damage instantiate *alienable possession*, while POSSESSEES whose detachment leads to permanent destruction, for instance, the removal of one's legs, are examples of *inalienable possession*. This distinction is marked to varying degrees in different languages. It is barely noticeable, or even completely absent, in many languages of Europe; the native/indigenous languages of the American continents are frequent examples of systematic marking of alienable vs. inalienable possession. The conceptual link between LOCATION, EXISTENCE, and POSSESSION has been discussed in numerous publications, Lyons 1967 being one of the seminal articles. Based on the semantic parameters of CONTROL, ALIENABILITY, and SPATIAL PROXIMITY, Stassen (2009) offers a distinction between four types of possession: alienable, inalienable, temporary, and abstract.

As indicated by examples (1) and (2) on the previous page, possession can be encoded by means of an entire predication or by modifying a nominal. These two strategies are used in different contexts. It has been demonstrated that they have different discourse functions and obviously completely different structural characteristics. This, in turn, has led many scholars to focus either on predicative or adnominal possession, and two almost completely separate bodies of literature have evolved over time. In work dedicated to predicative possession, issues that have received a lot of attention include the semantic composition of the domain, as well as the structural properties of the strategies employed for its encoding.

This edited volume, *Approaches to Predicative Possession: The View from Slavic and Finno-Ugric*, is the offspring of a panel on predicative possession, part of the meeting of the British Association for Slavonic and Eastern European Studies (BASEEES), held at Cambridge in March 2017. The book includes an introduction by Gréte Dalmi, nine chapters, and a conclusion by the editors. The introduction sets the scene by presenting the languages under study: two East[2] Slavic languages (Russian and Belarusian) and one West Slavic (Polish). The Uralic family is represented by five branches: Hungarian; Finnic by Finnish; Mari by Meadow Mari; Permian by Komi-Permyak and Udmurt; and finally, the Samoyedic branch by Selkup.

There is a brief overview of theoretical approaches to predicative possession. Some functionally oriented work is mentioned (e.g., Stassen 2009), but the general orientation is clearly towards formal linguistics.

[2] The classification used here is from Glottolog (https://glottolog.org/).

Parameters considered relevant for the analysis of predicative possession include the use of verbs such as HAVE and BE, as well as negation and definiteness. The verbs HAVE and BE surface in various ways in East and West Slavic languages, especially those that have been in close contact with Uralic varieties. Following a generative perspective, they are considered derivationally related. After an overview of previous formally oriented work on possessive predications, the chapters of the book are summarized one by one. For an edited volume that claims to bring together different approaches to predicative possession, as a reader and reviewer, I would have liked to see a discussion of possible working definition(s) of predicative possession as opposed to other kinds of possession.

In chapter 2, "Genitive of Negation (GoN) in Polish Possessive and Existential Sentences: A Testing Tool for Case Overwriting, Case Projections and Derivational Phases", Jacek Witkoś uses GoN as a basis for discussing the viability of several syntactic theories that account for case assignment. The author starts by presenting relevant data from Polish. Specifically, direct objects are marked accusative in affirmative sentences, but under negation, their case changes to genitive, as shown in (7) below.[3]

(7) a. Maria czyta gazet-ę. (Polish)
Maria reads newspaper-ACC
'Maria is reading a newspaper.'

b. Maria nie czyta gazet-y.
Maria NEG read newspaper-GEN
'Maria is not reading a newspaper.'[4]

In a similar fashion, GoN is assigned to the possessee in predications of possession, as in (8) below.

(8) a. Maria ma gazet-ę. (Polish)
Maria has newspaper-ACC
'Maria has a newspaper.'

[3] The following abbreviations are used throughout the paper: ACC = accusative; ADE = adessive; ADJVZ = adjectivizer; ADV = adverbial; AOR = aorist; DAT = dative; DU = dual; EP = epenthetic; EXIST = existential; GEN = genitive; INE = inessive; INF = infinitive; M = masculine; N = neuter; NEG = negation; NOM = nominative; PAR = partitive; PAST = past tense; PL = plural; PRS = present tense; SG = singular.

[4] Unless otherwise specified, all examples come from the relevant chapter under review. Formatting of glosses in this review follows the formatting found in the reviewed book and thus departs from the JSL stylesheet.

(8) b. Maria nie ma gazet-y.
Maria NEG have newspaper-GEN
'Maria does not have a newspaper.'

GoN occurs when negation scopes over the entire predication, but is not observed with constituent negation. Furthermore, change of object case marking to genitive is not observed in predications with a dative object (beneficiary), nor with most predications with a prepositional/indirect object. However, there are contexts when indirect object too can be assigned GoN; cf. (11) below.

The author observes that GoN appears with the nominal argument of locative-existential constructions in Polish, dubbed "subject" by him.[5]

(9) a. Na stole jest piwo. (Polish)
on table is beer.NOM
'There is beer on the table.'

b. Na stole nie ma *piwo /piw-a.
on table NEG have.3SG beer.NOM beer-GEN
'There is no beer on the table.'

Witkoś also points out that GoN applies "long distance", that is, with complements of embedded constructions, as shown in (10) below. In addition, GoN can be applied to both indirect and direct objects when the indirect object is marked by the accusative case in the positive predication, as in (11).

(10) a. Maria$_i$ kazała Jan-owi$_j$ [PRO$_j$ czytać listy]. (Polish)
Maria.NOM told Jan-DAT read.INF letters.ACC
'Maria told Jan to read letters.'

b. Maria$_i$ nie kazała Jan-owi$_j$ [PRO$_j$ czytać *list-y/
Maria.NOM NEG told Jan-DAT read.INF *letters-ACC
list-ów].
letters-GEN
'Maria did not tell Jan to read letters.'

(11) a. Maria nauczyła Basi-ę czytać cyrylic-ę. (Polish)
Maria.NOM taught Basia-ACC read.INF Cyrillic.script-ACC
'Maria taught Basia to read the Russian alphabet.'

[5] While this is not immediately relevant for the author's inquiry, I find the use of the term "subject" surprising given that there is a vast amount of work on existential predications which shows that nominal arguments in existential predications are the least prototypical subjects and are better referred to as "pivots".

(11) b. Maria nie nauczyła Bas-i czytać cyrylic-y.
Maria.nom neg taught Basia-gen read.inf Cyrillic.script-gen
'Maria did not teach Basia to read the Russian alphabet.'

Several theoretical accounts are considered. The first one brings up the work of Błaszczak, and ultimately also of Borschev and Partee (2002), and posits two different types of locative constructions. Following the terminology adopted in this article and cited work, they are referred to as the existential locative, (12a), and agentive locative, (12b).

(12) a. Ivana ne bylo v komnate. (Russian)
Ivan.gen neg was.3sg.n in room
'There was no trace of Ivan in the room.'

b. Ivan ne byl v komnate.
Ivan.nom neg was.3sg.m in room
'Ivan was not in the room.

GoN applies in existential locatives but not in agentive locatives. This is accounted for by their different perspectival centers, as suggested by Borschev and Partee (2002), and also by different underlying representations for these constructions, following Błaszczak (2001, 2008, 2010).

(13) Adaptation of Błaszczak's (2008, 2010) analysis of possessive constructions, locative existentials, and agentive locatives

a. Transitive possessive

$[_{\text{NegP}}$ Neg $[_{\text{vP}}$ NP$_{AGENT}$ (possessor) $[_{\text{v}}$ v $[_{\text{VP}}$ V NP$_{THEME}$]]]]

b. Locative existential

$[_{\text{NegP}}$ Neg $[_{\text{vP}}$ PP$_{LOC}$ $[_{\text{v'}}$ v $[_{\text{VP}}$ V NP$_{THEME}$]]]]

c. GoN: Neg > v > NP

d. "Agentive" locative

$[_{\text{NegP}}$ Neg $[_{\text{vP}}$ NP$_{AGENT}$ $[_{\text{v'}}$ v $[_{\text{VP}}$ V PP$_{LOC}$]]]]

As indicated in (13a–c), in possessive sentences as well as in locative existentials, the thematic NP falls under the c-command of NEG/v', while in (13d), it does not, since it is no longer the theme NP but rather the agent NP.

The next framework considered by Witkoś is Pesetsky's (2013) theory of case overwriting. After a rather esoteric introduction to this model, Witkoś concludes that Pesetsky's approach can be used to account for core cases of GoN, but not for long-distance GoN as in (11).

Witkoś moves on to nanosyntax as another alternative to investigate in the quest to account for GoN. Via its mingling of morphology and syntax, as well as by its perspective on case as a functional projection, this framework is said to provide the means "to derive various case patterns" and to allow "for the movement of NP within the set of case projections" (p. 25). However, similar to Pesetsky's (2013) theory, the nanosyntactic approach is not found satisfactory with regard to providing an account for long-distance GoN. Witkoś appears to suggest that an operation such as Agree, as outlined in Chomsky's (2000, 2001) work, can be further exploited when looking to account for GoN in all its complexities.

The chapter is theoretically grounded; it definitely represents a solid piece of work as far as testing a set of data against different formal models. However, it has to be said too that this section is rather esoteric and might be challenging for non-specialists in these frameworks.

Chapter 3, "Extraction of Possessive NP-Complements and the Structure of the Nominal Domain in Polish", is authored by Piotr Cegłowski. The focus of the chapter is achieving a formal analysis of nominal phrase complements, including adnominal possessives, as illustrated by data in (14).

(14) Jeszcze w szkole średniej, jak sam (Polish)
already in school high as (he) himself

wspominał, [$_{NP2}$ węgierskich pisarzy]$_i$ czytywał [$_{NP1}$ książki *t*]
recalled Hungarian writers (he) read books

(z przyjemnością).
with pleasure

'Already in high school, as he himself recalls, he used to read the books of Hungarian writers with pleasure.'

The author strives to achieve a representation of the domain that would both cover its formal properties and also model its comprehension. To this end, Cegłowski conducted an online survey with 183 native speakers. In an online questionnaire, participants were asked to rate sentences according to grammaticality. The sentences they were given covered various types of extraction constructions: Left-Branching Extraction of adjectives, demonstratives, wh-complements, NP-complements—including extraction of possessive/genitive NP complements, as in (14) above—extraction across numerals, and more complex kinds of extraction. They rated the sentences on a scale from 1 to 5, where 1 is least grammatical/ungrammatical and 5 is definitely grammatical. The collected data were analyzed by rigorous statistical procedures. After analyzing previous parsimonious accounts (e.g., Bošković 2008), and also based on the statistical analysis of his own data, Cegłowski argues that accounts presented so far do not capture the complexity of the domain adequately. He

suggests instead a refined representation, still based in minimalism but also taking into account discourse factors such as topicality and focus as well as various collocations, such as those with demonstratives, numerals, and relative clauses, (15).

(15) Underlying representation of NP-complements in Polish

$[_{DP}$ D $[_{TopP}$ Top $[_{FocP}$ Foc $[_{AgrP}$ DemP $[_{AgrP}$ Agr $[_{QP}$ NumP $[_{QP}$ F_Q $[_{NP}$ (wh/AP) $[_{NP}$ N]]]]]]]]]

Thus, while theoretically grounded, Cegłowski's account also provides solid empirical evidence and analysis, thus opening the problem to further studies.

The study is undeniably very interesting and meritorious. I do, however, have a couple points of criticism.

Methodology and data collection. It would have been beneficial for further replications of the study to see the questionnaire in its entirety. Furthermore, the reader is left wondering about the stratification of the participants. Apart from the fact that they are all native speakers of Polish, we know nothing about relevant sociological variables such as age, gender, education, and occupation. There is no information either about the way(s) participants were recruited for the study.

Relation to the topic of the volume. It is not clear how this topic is relevant for predicative possession. An explicit motivation would have contributed to the cohesion of the volume.

In chapter 4, Olga Kagan, building on previous work (e.g., Francez 2007), lays out the characteristics of existential predications with a special focus on the nominal in them, typically dubbed "pivot" in the relevant literature. Similar to many other scholars, Kagan points out that the nominal in existential predications tends to be indefinite and can appear together with indefinite articles, numerals, and indefinite quantifiers such as *some*. Following Milsark (1974), Kagan refers to nominals acceptable in existential predications as *weak,* and the ones that are unacceptable as *strong*. Essentially, this amounts to stating that definite nominals are generally not welcome in existential sentences.

The contrast between weak and strong nominals in existential sentences has been referred to as the Definiteness Effect. The manifestation and justification for the Definiteness Effect in Russian existential and possessive predications is the subject matter of Kagan's article. Specifically, she notes that affirmative and negative existential sentences differ in Russian with regard to this parameter. In Russian affirmative existential sentences, the nominals are

typically weak; strong ones are generally not admitted, as demonstrated by the data in (16).[6]

(16) a. V zale est' vrač. (Russian)
in hall be doctor.NOM.SG
'There is a doctor in the hall.'

b. V zale est' stul'ja.
in hall be chair.NOM.PL
'There are chairs in the hall.'

c. *V zale est' ètot vrač.
in hall be this.NOM.SG doctor.NOM.SG
'There is this doctor in the hall.'

d. *V zale est' pjat' iz ètix studentov.
in hall be five.NOM of these students
'There are five of these students in the hall.'

However, in Kagan's view, the Definiteness Effect is highly limited in negative existential sentences since along with weak nominals, there are also a number of occurrences of strong ones, that is, NPs with a definite reading are fully possible, as in (17).

(17) a. V zale net vrača. (Russian)
in hall NEG.be doctor.GEN.SG
'There is no doctor in the hall.'

b. V zale net stul'ev.
in hall NEG.be chair.GEN.PL
'There are no chairs in the hall.'

c. V zale ne bylo pjati vračej.
in hall NEG was five.GEN doctor.GEN.PL
'There weren't five doctors in the hall.' (NEG > 5)
Or: 'Five doctors were not in the hall.' (5 > NEG)

d. Ètogo vrača net v zale.
this.GEN.SG doctor.GEN.SG NEG.be in hall
'This doctor is not in the hall.'

[6] The third lines of the ungrammatical Russian examples in (16c–d) are quoted directly as they appear in Kagan's chapter.

(17) e. Dimy /ego net doma.
Dima.GEN he.GEN NEG.be at.home
'Dima/He is not at home.'

Kagan starts her analysis by pointing out that the nominative case of the pivots in the affirmative existential predications has to be replaced by genitive of negation in the negative ones. She notes too that GoN alternates with the accusative marking the direct object in transitive sentences and also subjects of unaccusative intransitive sentences, (18) and (19).

(18) a. Anna ne kupila knigi. (Russian)
Anna NEG bought books.ACC.PL
'Anna didn't buy (the) books.'

b. Anna ne kupila knig.
Anna NEG bought book.GEN.PL
'Anna didn't buy (any) books.'

(19) a. Otvet ne prišel.
answer.NOM.SG NEG arrived.M
'The answer did not arrive.'

b. Otveta ne prišlo.
answer.GEN.SG NEG arrived.N
'No answer arrived.'

Kagan states that the arguments marked by the genitive case are known to be indefinite, non-specific, and non-referential. However, there are also definite and specific nominals that can be marked genitive under certain circumstances. For instance, Kagan claims that the nominal in (19b) can be given a specific reading, despite the fact that it is marked by the genitive case. She provides a formal semantic account for this state of affairs. Specifically, she builds on McNally 1998, as well as Borschev and Partee 2002 and Partee and Borschev 2004. These scholars argue that negative existential sentences contain property-denoting predicates in that they systematically entail the non-existence of an entity at a certain location. Furthermore, Kagan points out that two semantic properties have been suggested to characterize objects that appear in GoN: property-type denotation and absence of existential commitment. In her view, definite nominals marked by GoN undergo a shift to the property type. For example, in (17e) the nominal *Dima* comes to denote a specific property, e.g., the property of being the individual Dima, rather than the token/individual Dima. That is, Kagan applies an intensional rather than a denotational approach to meaning, thus following Borschev and Partee (2002) and likewise

Zimmermann (1993: 10–11). This shift to property type is observed with all definite NPs that are marked by GoN; when the NP has undergone the shift, the verb undergoes a shift too. For instance, consider the verb in (19b), which shows no agreement with the subject and appears in neuter rather than masculine gender. Eventually, Kagan turns to predications of possession, which are encoded by the existential construction in Russian. After laying out the basic facts of Russian predications of possession, Kagan turns to the Definiteness Effect. She postulates that definite possessees in Russian can only be interpreted as referring to the property type and not to a specific token, (20).

(20) a. U menja est' èta kniga. (Russian)
at me be this.NOM.SG book.NOM.SG
'I have this book.'

b. U menja net ètoj knigi.
at me NEG.be this.GEN.SG book.GEN.SG
'I don't have this book.'

In the statement in (20a), *èta kniga* 'this book' can only refer to the whole set of particular copies of a given book. In other words, a reading whereby the sentence means that the speaker owns a specific physical object is not possible. One wonders, then, how ownership of a specific object is encoded in Russian.

There are two possible readings under negation in (20b): one where the possession of a specific property type is negated; another where the physical location of a specific token is negated, e.g., 'this book is not at me/with me'. Kagan concludes that GoN facilitates the shift to property-type interpretation. The Definiteness Effect, i.e., the ban on definite NPs, is eliminated in negative existentials; however, the Definiteness Effect remains valid in negated possessive predications. This remains a thorny issue for the author and she leaves it to future research. The semantic analysis offered here is a valuable example of viewing language facts in a specific theoretical framework.

As indicated in Kagan's conclusions, she considers the Definiteness Effect in existential and possessive sentences to be a crucial factor for their distinction on several levels. These include crosslinguistic contrast, e.g., differences between existential and possessive sentences in Russian and in English. The Definiteness Effect is also an important diagnostic for the intralinguistic differentiation of these sentence types. Specifically, Kagan maintains that it is valid only to a limited degree in Russian negative existential sentences; conversely, the Definiteness Effect leads to several semantic shifts in BE-possessive sentences in Russian, such as the change to property type rather than token type for definite pivots, or to locative rather than possessive reading if a definite pivot is interpreted as a token.

Egor Tsedryk presents a very informative overview of Belarusian predicative possessive constructions. Belarusian is unique among the languages studied in the book in using be or have, in different constructions, to encode predicative possession.

(21) a. U Hanny ësc' kvatèra. (Belarusian)
at Hanna.gen be.exist apartment.nom
'Hanna has an apartment.'

b. Hanna mae kvatèru.
Hanna.nom have.3sg apartment.acc
'Hanna has an apartment.'

The article consists of two parts: (i) data presentation and (ii) theoretical modeling. In the first, the different encodings of predicative possession in Belarusian are analyzed in terms of the verbal item used in them, e.g., either be or have, the functional load associated with each construction, and their potential to encode prototypical possession/ownership. Other parameters considered in the descriptive part of the article relate to the encoding and interpretation of the possessee, e.g., the Definiteness Effect and GoN. In the second part, Tsedryk views the presented data within the minimalist framework and offers a theoretical account for the observed facts.

Essentially, Tsedryk makes a distinction between three different ways of encoding predicative possession in Belarusian and dubs them according to the verb item used: (i) existential be as in (22a); (ii) copular be as in (23a); and (iii) have-construction as in (21b), (22b), and (23b).

(22) a. U Heli ësc' dačka i syn. (Belarusian)
at Helja.gen be.exist daughter.nom and son.nom
'Helja has a daughter and a son.'

b. Helja mae dačku i syna.
Helja.nom has daughter.acc and son.acc
'Helja has a daughter and a son.'

(23) a. U Hanny *ësc' / Ø pryhožyja vočy.
at Hanna.gen be.exist be.cop.prs [beautiful eyes].nom
'Hanna has beautiful eyes.'

b. Hanna mae pryhožyja vočy.
Hanna.nom has [beautiful eyes].acc
'Hanna has beautiful eyes.'

Tsedryk finds the existential and copular BE-constructions to be in complementary distribution, as their functions never overlap. Specifically, the existential BE-construction encodes kinship and abstract possession, while the copular BE-construction is used for body parts, inanimate part-whole relations, diseases, and psychological conditions. HAVE-constructions alternate with existential BE for both of its uses, kinship and abstract possession; they alternate with copular BE-constructions to express body parts and inanimate part-whole relations. However, HAVE-constructions are not used for the encoding of states such as diseases, e.g., 'he has the flu', or psychological states. I would have liked to see some discussion on their frequency. Likewise, what determines the choice of one over the other in the cases when they overlap for specific functions? Is there any evidence that one is preferred in particular contexts?

Following Tham's (2006: 138) analysis of English *have*-possessives, Tsedryk considers both the HAVE-construction and the existential BE-construction to be underspecified in their lexical representation for encoding prototypical ownership. In his view, this is motivated by the fact that the sense of permanent possession can be easily cancelled with all of these constructions, and they can come to express temporary possession or availability instead. Generally, I find this to be a strange approach to multiple uses as it appears to exclude polysemy, e.g., a lexical item or a construction may express either permanent or temporary possession, with any particular interpretation being contingent on context.

Tsedryk does contend that Belarusian speakers associate HAVE with prototypical ownership and that indefiniteness of the possessee, or, in fact, the "existential closure of the possessee" (p. 87), is a decisive factor for interpreting the construction as designating permanent or temporary possession. This brings us to the Definiteness Effect in these constructions. Permanent possession is encoded by them when the possessee has a type reading, whereas the ownership is more likely to be conceived of as temporary when the possessee has a token reading.

As regards GoN, Tsedryk observes that similar to Russian, accusative case marking is used to designate a specific entity that is presupposed and salient in the discourse, while the genitive tends to be used for non-specific or generic possessees. In addition, GoN is described as mandatory for the BE-existential, as well as for the HAVE-construction. It is not observed in the BE-copular constructions, which, in Tsedryk's view, is due to the fact that an existential operator is not present in them. However, he also observed that the lack of an overt verbal form in the present tense makes the sentential negator indistinguishable from constituent negation.

Generally, as regards the negation of predicative possession, I am surprised that the focus has been restricted only to GoN. Belarusian offers very interesting data as regards lexicalization of negative existence, specifically,

that the negative existential *njama*—a transparent univerbation between the negator *ne* and *(i)ma* 'have$_{3SG.PRS}$'—is restricted to the negative existential construction. However, the construction with the verb *mec'* 'have' is negated by the standard negator *ne*. This fact is only shown by a couple of examples, without any further discussion.

(24) a. U mjane njama hètaj knihi/ (Belarusian)
at me.GEN not.be.EXIST [this book].GEN
*hètaja kniha.
[this book].NOM
'I don't have this (kind of) book.'

b. Ja ne maju hètaj knihi.
I.NOM NEG have.1SG [this book].GEN
'I don't have this (kind of) book.'

After a concise summary of the descriptive part, Tsedryk turns to discussing possession from a theoretical perspective. He starts off with an overview of Langacker's (1993, 2009) definition of possession and then a deft presentation of functionally oriented authors such as Heine (1997) and Stassen (2009). However, his focus is clearly on providing a minimalist-based account of the Belarusian facts. Unlike such authors as Freeze (1992) and Kayne (1993), he concludes that HAVE is not a result of incorporating a locative P into BE. In Tsedryk's view, HAVE represents a transitivized form of a spatiotemporal root √AT, whose logical form is realized as a free variable of individual type e in the denotation of the clause. This variable can be either existentially closed or contextually bound. Tsedryk correlates this with two set-theoretic possibilities postulated in Langacker's definition of possession, namely, possession as inclusion into a domain or into a class of potential targets. The two set-theoretic possibilities are distributed between two derivational options: one that features an existential phrase of type <e, t> (intersection of two sets) and another of type e (inclusion of a set). These two scenarios lead, in Tsedryk's view, to the BE-existential and BE-copular constructions. The two co-exist in strictly complementary distribution, with consistent allomorphy.

Tsedryk acknowledges the possibility that there might be a diachronic account for the use of alternative encodings of predicative possession in Belarusian. He is correct inasmuch as such alternation between BE- and HAVE-constructions existed in Old Church Slavonic. A detailed investigation of this issue is still in demand. Another direction for future research is a comparative perspective that takes into account variation within all East Slavonic languages, specifically Ukrainian, as a similar alternation between BE- and HAVE-constructions is observed in that language as well. It would be interesting to

find out how their distribution patterns and whether it is similar or different from what we have seen for Belarusian.

As in the chapters by Witkoś and Kagan, a discussion of data sources and data collection procedure is entirely missing in Tsedryk's chapter. As a data-oriented linguist, I find such discussions indispensable. They would have been enlightening even for more theoretically minded readers.

As already stated, the account presented for the Belarusian data is clearly grounded in minimalist syntax. However, the author demonstrates openness to several frameworks and alternative approaches, which is highly commendable. In addition, the detailed description of Belarusian data makes this chapter a welcome contribution to scholarship on an understudied language.

In chapter 6, Maria Vilkuna presents an analysis of expressions of predicative possession in Finnish, setting it within the framework of Construction Grammar. One of the most common ways to encode predicative possession in Finnish uses a construction modeled on the existential clause. As shown in (25b) below, in the possessive clause, the possessor is encoded by the locative constituent and the possessee by the NP which corresponds to the pivot in an existential clause.

(25) Existential (ExCl)

a. Sohva-lla/Anna-n syli-ssä on koira. (Finnish)
sofa-ADE Anna-GEN lap-INE be.3SG dog
'There is a dog on the sofa/in Anna's lap.'

Possessive (PossCl)

b. Anna-lla on koira /koir-i-a /raha-a.
Anna-ADE be.3SG dog.NOM dog-PL-PAR money-PAR
'Anna has a dog/dogs/money.'

Locative (LocCl)

c. Koira on sohva-lla/Anna-n syli-ssä.
dog be.3SG sofa-ADE Anna-GEN lap-INE
'The dog is on the sofa/in Anna's lap.'

Transitive

d. Anna hala-a koira-a.
Anna hug.3SG dog-PAR
'Anna is hugging a/the dog.'

After a theoretical overview in which she points out broad differences and commonalities between four different construction types—possessive (25b), existential (25a), locative, and transitive—Vilkuna proceeds with a detailed

constructional analysis of the predication labeled by her PossCl, as in (25b). She does point out that the domain of predicative possession can be encoded in other ways as well, specifically, by verbs such as *omistaa* 'own' to express legal possession, *omata* 'possess', used mainly in participial constructions, *kuulua* 'belong', as well as by copular clauses with the possessor in genitive case, e.g., 'The dog is Anna's'. However, the predication dubbed PossCl here is "the basic, unmarked construction" that encodes not only prototypical possession, but also relations which the author considers outside such prototypical possession, such as part-whole relations.

Vilkuna suggests that the Existential Clause serves as an overarching schema on which the Possessive Clause is modeled. Following Hakulinen et al. (2004: §893), she identifies the properties of the core ExCl as follows: (i) a constituent order which typically includes a locative, a verb, and an entity/existent labeled E, that is, LOC V E; (ii) the function of the ExCl is to introduce a new referent into the discourse; (iii) case marking of E in the affirmative clause is partitive when cumulative (non-bounded) reference is targeted; in other instances, E/pivot is marked nominative; (iv) case marking of E under negation is normally partitive; (v) there is no agreement between the verb and E; and (vi) the verb used in the construction is normally *olla* 'be'. Vilkuna notes that there are deviations from each of these properties; the more they accumulate, the further the distance from the core Existential Clause.

The Possessive Clause, while building on ExCl, emerges as a distinct clause type with its own characteristics that depart in several ways from the ones just listed for ExCl. Specifically, features that appear exclusive to the PossCl include case marking of the possessor, the choice of verb, and case marking of the possessee.

For instance, as indicated in (25a), there are different options for the case marking of the locative phrase in an Existential Clause. Conversely, the only possible case for marking the possessor in the Possessive Clause is the adessive. However, Vilkuna points out that adessive marking on a topical constituent should not be taken as the sole indicator of a possessive construction. Rather, adessive-marked animate participants are strong candidates for this position even outside the Possessive Clause (cf. p. 124).

The invariant form used in the Possessive Clause is by definition a form of the verb *olla* 'be'. Vilkuna points out that this preference is a mark of specialization of the Possessive Clause and likewise of its stative character. In endnote 15, she does mention two other possible verbs for the Possessive Clause: *riittää* 'be enough' to express notable quantity of the possessee or *puuttua* 'lack' as a lexical way of negating possession. Both of these are quite restricted in use and still stative. Thus, the verbs used in the Possessive Clause contrast with the Existential Clause, which admits dynamic verbs such as *tulla* 'come' or *ilmestyä* 'appear' and can thus express change.

The marking of the possessee, especially under negation, is one of the features that most clearly distinguish the Possessive Clause from the Existential Clause. The author shows quite convincingly that the choice of case for the pivot/possessee is governed by ontological and discourse-pragmatic factors such as specific vs. generic interpretation, alienable vs. inalienable possession, quantification, and also by the scope of negation. For instance, the partitive marking of the possessee, which is normally expected under negation, can be replaced by nominative, (26).

(26) Minu-lla ei ole punainen mekko/ (Finnish)
I-ADE NEG.VERB.3SG be red.NOM dress.NOM
punais-ta mekko-a.
red-PAR dress-PAR
'I don't have a red dress.'

In (26) above, the nominative is suitable when the speaker is talking about the color of the dress she is wearing on a specific occasion, while the partitive marking is expected when she describes the contents of her wardrobe and the fact that she does not own a red dress in general. Nominative marking is also possible in affirmative sentences when those indicate part-whole relations or abstract possession, as in (27).

(27) a. Rakennukse-ssa on iso-t ikkuna-t. (Finnish)
building-INE be.3SG big-PL window-PL
'The building has big windows.'

b. Rakennukse-lla on kiinnostava historia.
building-ADE be.3SG interesting history
'The building has an interesting history.'

Vilkuna notes that apart from indicating inalienable possession, the use of the nominative case for the possessee is not common; however, the limits of its use remain evasive. Another context that clearly triggers its use is when the possessor group shares identical possessions, and this is indicated by the modifier *sama* 'same', as in (28).

(28) Laps-i-lla ei ole sama isä. (Finnish)
child-PL-ADE NEG.VERB.3SG be same father
'The children do not have the same father.'

Generally, the partitive contributes to asserting or denying the existence of the possessee in a general manner. A possessee-marked nominative singles

it out as a specific instance or in possessive predications with an essentially characterizing function, regardless of polarity.

(29) a. Mei-llä on hyvät tuotteet ja (Finnish)
we-ade be.3sg good.pl product.pl and
tyytyväiset asiakkaat.
satisfied.pl customer.pl
'We have good products and satisfied customers.'

b. Mei-llä ei ole huono maku/suuret-t tulo-t/
we-ade neg.verb.3sg be bad taste big-pl income-pl
läheise-t väli-t /mukava-t olosuhtee-t.
close-pl relation-pl comfortable-pl circumstance-pl
'We don't have bad taste/a big income/a close relationship/ comfortable circumstances.'

Vilkuna appears to consider predications such as those in (29) as slight departures from the core Possessive Clause. However, it is worth noting that casting characteristics as a possessive relation but encoding them by a construction that deviates from the one used for prototypical possession is observed with other languages in this book, for instance, with the be-copular construction in Belarusian, which is the only one used for the encoding of states.

Vilkuna wraps up her article with a general summary of her findings. She points out that while the Possessive and the Existential Clause clearly share many features and the Existential Clause is demonstrably the overarching schema, the Possessive Clause emerges as a clause type in its own right. This is based on features outlined above, but also on the semantic properties of its constituents. Specifically, the possessor is the dominant element in the PossCl since it shows properties such as (i) binding of a reflexive element; (ii) being typically animate; and (iii) determining the interpretation of the possessee when the latter is exhaustively construed. The referents of the possessee tend to be controllable entities that are often introduced as personal attributes of the possessor. Finally, the encoding of abstract possession indicates that the PossCl is a productive construction on its own.

While presenting a chapter with a strong theoretical grounding in construction grammar, Vilkuna also has a sound empirical basis. In addition to a meticulous and engaging data presentation, she also offers discussions of variation patterns as well as possible frequency effects.

Chapter 7, authored by Gréte Dalmi, offers a formal semantic-syntactic analysis of the argument structure of be-possessives in Hungarian. The author starts off by making a distinction between be-copular and be-existential/possessive predications, shown in (30) on the following page.

(30) BE_{COP} <[$_{SC}$ DP XP]> (where XP = NP/AP/PP/AdvP)

a. A császár Ø bölcs. (Hungarian)
the emperor COP wise
'The emperor is wise.'

BE_{EXIST} <(DP), DP>

b. A kert-ben VAN-NAK virág-ok.
the garden-in be.EXIST-3PL flower-PL
'There are flowers in the garden.'

BE_{POSS} <DP, DP>

c. A császár-nak VAN új ruhá-ja.
the emperor-DAT be.EXIST.3SG new clothes-POSS.3SG
'The emperor has new clothes.'

Dalmi brings up several semantic and syntactic aspects, illustrating them with Russian and Hungarian data. They can be summarized as follows:

(i) Semantic interpretation of the predications listed in (30): Dalmi notes that existential and possessive BE-predications "state the existence of an individual in a given location or relation" (p. 137), thus situating her work as part of a long line of similar scholarship within the generative tradition. BE-copular predications, on the other hand, are described as denoting a property of the subject; in addition, the copula is said to bear a number of grammatical functions, such as tense, mood, aspect, and person-number-gender agreement. The implication here appears to be that the BE-existential and BE-possessive do not have such functions, which in turn is puzzling to me. The only feature it typically does not have is indexation of the properties of the pivot/possessee; however, in both Hungarian and Russian, the existential and possessive item is the one that signals the temporal reference/tense of the clause.

(ii) Definiteness restriction: pivots, or the only argument of the BE-existential/possessive clause, are required to be indefinite or non-specific; such a restriction does not apply for the single argument of a copular predication.

(iii) Quantifier floating is found possible for copular predications but not in existential or possessive predication.

(iv) Clause negation: Dalmi notes that copular predications are negated by the standard negator in both Russian and Hungarian, while a special negative existential verb must be used in existential and possessive predications.

(v) GoN is required in existential and possessive predications but not in copular predications.

(vi) Zero copula in the present tense is mandatory for copular predications but not for existential and possessive predications.

After wrapping up the overview of the features characterizing be-copular and be-existential/possessive predications, Dalmi moves on to a critical review of literature relevant for the analysis of expressions of predicative possession. First, she challenges the tradition stemming from Benveniste's (1966: 197) statement "*avoir* n'est rien autre qu'un *être-à* inverse" (*avoir* is nothing other than inverted *être-à*), whereby have is considered to be an inverted version of be. In support of this, she evokes the differences she outlined between be-copular and be-existential constructions, arguing that the latter pattern with have-constructions, thus be-existential constructions are a distinct construction type from be-copular. In addition, she follows the analyses proposed by Paducheva (2000) and Partee and Borschev (2008), ultimately suggesting that the current ways of analyzing be and have in the generative tradition should be reconsidered. Second, she brings up research (e.g., Szabolcsi 1992, 1994) as well as several other scholars who draw parallels between adnominal and predicative possession in their analyses. This line of thinking establishes a structural analogy between Hungarian possessive constructions and the clausal structure of configurational languages. Specifically, the possessor corresponds to the subject and the possessee to the predicate; the possessor is extracted from the possessive DP in the same way as subjects are extracted from the clause. Dalmi finds this parallelism problematic from a theoretical point of view. For instance, she cites cyclic movement and long operator movement that can move the possessive DP to the left periphery of the sentence in general. However, she points out that the be-possessives diverge from the general pattern since such movement is not possible for the dative possessor, as in (31b) below.

(31) a. [$_{FocP}$ Ki-nek$_i$ [$_{IP}$ mond-tad [$_{DP}$ t_i [$_{CP}$ hogy (Hungarian)
who-dat say-past.2sg that

[$_{IP}$ elvesz-ed [$_{DP}$ t_i a [$_{NP}$ t_i lány-á-t]]]]]]]?
marry-2sg the daughter-poss.3sg-acc

'Whose daughter did you say that you would marry?'

b. *[[$_{FocP}$ PÉTER-NEK$_i$ új ruhája] mond-tad
Peter-dat new clothes.poss.3sg say-past.2sg

[t_i [$_{CP}$ hogy [$_{IP}$ VAN [$_{DP}$ t_i]]]]?
that be.exist

Intended: 'Did you say it was Peter who had new clothes?'

Furthermore, Dalmi notes that a data-oriented perspective offers arguments against the parallelism between adnominal possessives and BE-possessive constructions. This can be demonstrated by the fact that definite possessive adnominal constructions can move to the left periphery of a sentence, while this is not possible with the indefinite possessees of the BE-possessive predications.

Dalmi suggests that possessive BE selects two distinct arguments, which have different thematic roles. For this reason, she concludes that BE-possessives cannot be analyzed on a par with possessive DPs. After performing several syntactic tests to support this claim, she moves on to formulate a more substantive proposal with regard to the argument structure of BE-possessives. Adhering to the thinking of a number of scholars, she suggests that existential BE takes a location and a theme argument, while possessive BE takes an oblique and a theme argument. This makes the VP-internal structure of existential and possessive BE-predicates similar to that of *psych*-predicates, which are dyadic unaccusatives. Typically, both of their arguments are internal to the VP and their subjects are far removed from canonical agentive subjects. Based on binding as well as on facts of agreement, Dalmi contends that the argument structure of existential and possessive BE-predicates in Hungarian resembles that of the 'please'-class of psych-predicates. Consequently, she concludes that the BE-predicates in Hungarian existential and possessive constructions should be considered dyadic unaccusative verbs.

In chapter 8, Alexandra Simonenko offers a formal semantic and syntactic analysis of the encoding of possession in Meadow Mari, a language representing the Mari branch of the Uralic family. In an introduction the author presents some facts about the Mari language and its speakers. They count in the hundreds of thousands and live mainly in the Volga and Uralic regions of the Russian Federation. There is also a presentation of the main encodings of possession in the language, shown in (32).

(32) a. myj-yn aka-m ulo. (Mari)
I-GEN sister-POSS.1SG be.PRS.1SG
'I have a sister.'

b. tide pört myj-yn.
that house I-GEN
'That house is mine.'

Simonenko labels the construction in (32a) an "existential possessive construction" (ExPoss), while the one in (32b) is dubbed a "predicative possessive construction" (PredPoss). I have to say that the latter denomination is somewhat puzzling to me as both constructions predicate possession. The construction in (32b) appears to build on Heine's (1997: 65) Equation Schema, e.g., *X is Y's*

(property); it would have been helpful if the chapter, and generally the book, had broader contextualization in the functionally oriented literature.

After declaring the ExPoss construction the focus of her study, the author lays out the basic differences between the ExPoss and PredPoss constructions. One of the most prominent ones is the definiteness of the possessee, also discussed by a number of authors as the Definiteness Effect. As has been explained in a number of previous chapters, it entails a non-specific or generic possessee in the existential construction as in (32a). In contrast, the possessee in the PredPoss construction (32b) is presupposed and definite.

The basic patterns of ExPoss are presented in §2. Simonenko states that ExPoss consists of a possessor NP marked genitive, a possessee in nominative, and an existential predicate which agrees with the latter in number. That agreement according to number is never really shown; in fact, in all examples, the verb 'be' occurs in 3sg either present or past.

Another important feature of this construction is the use of possessive suffixes, such as *–m* in (32a). It is determined by factors such as partial or total possessive relation. These concepts appear to relate to instantaneous vs. permanent possession. After studying the presentation of corpus data together with elicited data, the reader can formulate an understanding that possessive marking can be skipped when possession is partial/instantaneous, but it has to be used when possession is total/permanent. That contrast is limited to situations set in the present. When ExPoss has a non-present time reference, the use of possessive marking is optional.

Simonenko puts forth the claim that ExPoss sentences pattern with existential sentences in Meadow Mari. She further specifies that possession in these sentences has two loci and two different flavors. First, ExPoss makes an existential assertion that is restricted to a situation in which everything is controlled by the possessor. Second, the possessive marking on the possessee encodes information that applies exclusively to the possessor's situation. Thus, the ExPoss construction may encode either instantaneous control or a more permanent state of possession. These functions are directly related to the presence or absence of possessive marking and also to the temporal reference of the predication.

In §3 Simonenko turns to a formal semantic account of the Mari data and the ExPoss construction; her analysis is at times interspersed with parallels to the PredPoss construction. Special attention is paid to the existential predicate, which the author analyzes as introducing existential quantification. The possessive suffixes, on the other hand, introduce a salient relation. In §4, the author uses set-theoretical semantics to account for the fact that the Definiteness Effect obtains in the ExPoss construction but not in the PredPoss construction. After a theoretically grounded reasoning, she points out that the ExPoss construction asserts the existence of an individual controlled by the possessor, while the PredPoss construction presents relational information

about an individual that is already presupposed. This is why, in her view, the Definiteness Effect arises in the ExPoss construction but is absent in the PredPoss construction.

In her conclusions, Simonenko summarizes her analysis of the different components of ExPoss vs. PredPoss constructions. Specifically, she points out that the genitive possessors introduce a relation of control that is simultaneous with the time of the existential predicate; on the other hand, the possessive suffixes introduce a salient relation that is more situation-related, in particular, with the situation of the possessor. The genitive phrase shows flexibility in its functions, which is why it can be used to indicate domain restriction in the ExPoss construction and property in the PredPoss construction.

While the chapter is definitely more theoretically than data-oriented, it still provides an example of consistent and creative theoretical reasoning together with information on two encodings of predicative possession in Western Mari. Further inquiries about their functional distribution can be a good direction for future research.

In chapter 9, Nikolett Gulyás offers an analysis of the encoding of predicative possession in two closely related languages, Komi-Permyak and Udmurt, both from the Permic branch of the Uralic family. Her work presents a good example of a study on microvariation. The author opts for a functional approach to the domain of predicative possession.

After an overview of the sociolinguistic situation and of the morphosyntactic characteristics of Permic languages, Gulyás proceeds to a discussion of her data collection and methodology. The introduction also includes an overview of the standard functional typological literature on predicative possession.

The author proceeds to the classification of the Permic data, which is based on Stassen 2009, 2013. Specifically, both Komi and Udmurt can be demonstrated to adhere to Stassen's (2009, 2013) locative type, i.e., both encode predicative possession by a construction modeled on the existential construction. The author reviews all four predicative possession types suggested by Stassen and concludes that in Permic languages the domain is encoded by Stassen's locative type, shown in (33) and (34), and by a genitive-possessive construction containing a possessor marked by the genitive case and possessee encoded by a demonstrative and a nominal, shown in (35) and (36). The latter constructions are good examples of Heine's (1997: 65) Equation Schema, often rendered by structures such as *Y is X's (property)* > *Y belongs to X*, even though the author does not identify them as such.

(33) Nasta-lön em ńebög. (Komi-Permyak)
Nastya-GEN be.PRS.SG book
'Nastya has a book.'

(34) Ol'ga-len umoj už-ez vań. (Udmurt)
Olga-GEN good work-3SG be.PRS
'Olga has a good job.'

(35) Eta *perna/perna-ys Petra-lön. (Komi-Permyak)
this cross cross-3SG Peter-GEN
'This cross belongs to Peter.'

(36) Ta ly /*ly-ez puny-len. (Udmurt)
this bone bone-3SG dog-GEN
'This bone belongs to the dog.'

Gulyás notes that constructions which reflect the equational schema are not discussed as much in the typological literature as predicative possessives based on locative-existential constructions. In any case, her focus is mainly on the latter, with the purpose of identifying structural and semantic differences in the predication of possession in Komi-Permyak and Udmurt.

As demonstrated in (33) and (34) above, in both languages the predicative possessive construction involves two NPs, a possessor marked by the genitive case and a possessee, the marking of which differs between Komi and Udmurt; the construction also requires a form of the verb 'be'. Gulyás considers the possessee to be the grammatical subject of the clause, most likely because it governs agreement. She points out that even though closely related, Komi and Udmurt exhibit differences in their encoding of predicative possession. In particular, the two languages differ on the following parameters: word order, agreement, possible omission of elements on different levels, negation, and finally, the encoding of alienable vs. inalienable possession or lack thereof.

The pragmatically neutral word orders differ in Komi and Udmurt: SVO for Komi and SOV for Udmurt. Predicative possessive constructions in each language conform to the neutral word order in that language; consequently, it is safe to say that the difference in word order is maintained in the domain of predicative possession.

The most important facts as regards agreement are as follows. An invariant form is used in Udmurt in the present tense; some indexation of the number of the possessee on the existential verb is observed in non-present tenses, notably in the second past tense. In Komi, agreement between the possessee and the existential verb is generally expected; however, it is complicated by quantification. Specifically, no agreement occurs when the possessee is quantified by a numeral. However, if the possessee is quantified by a non-determined quantifier such as 'many', then agreement may occur if the possessee has been marked by plural, which is not obligatory. So both structural and semantic factors appear relevant for agreement.

Komi-Permyak and Udmurt are similar as regards negation of predicative possessive constructions in that in both languages a special negative existential is used in the present tense. This is a very common crosslinguistic tendency (cf. Veselinova 2013 and also Veselinova 2015 specifically for Uralic). I would have expected more detailed comments on the synchronically different negative existential in Komi-Permyak and in Udmurt, on their uses in non-present tenses, as well as the ways in which they pertain to the negative existential cycle (cf. Croft 1991; Veselinova 2014, 2016).

One of the most obvious differences between the two languages is the use of possessive marking on the possessee. It is also relevant for the discussion of possible alienability marking in these languages. As is well known, possessive suffixes are a huge topic in Uralic linguistics. The ones referencing 2nd and 3rd person are considered by some to indicate definiteness, while others analyze them as markers of topicality, emphasis, contrast, or associate relationship. In Komi, possessive suffixes are invariant in form and are used only when the possessee is modified by a demonstrative and refers to body parts, kinship terms, and abstract nouns. Possessive suffixes are not observed in any other instances. This distribution may be used as an argument for the presence of some marking of alienability in Komi-Permyak.

In Udmurt, possessive suffixes are always used, but they can be omitted with abstract nouns. Unlike in Komi-Permyak, possessive suffixes in Udmurt show variation in form that can be contingent on distinctions of alienability. Specifically, the vowel of the suffix is *y* with kinship terms, body parts, and abstract nouns; with all other nouns it is *e*. While Gulyás acknowledges some connection to the domain of alienability, she also notes that the use of suffixes with the vowel *y* is very limited. Consequently, she interprets the occurrence of *y*-possessive suffixes as morphosyntactic variation rather than an indication of a currently valid semantic distinction. Still, she notes that the semantics of predicative and adnominal possession in Permic languages do require further research. On the whole, the chapter offers a very detailed and theoretically informed overview of predicative possessive constructions in two Permic languages. As mentioned above, it is also a good example of a study of microvariation.

Beáta Wagner-Nagy opens chapter 10 with an overview of Selkup, its endangered status, morphosyntactic characteristics, and position among Samoyedic languages, a separate branch within the Uralic family. Selkup varieties are still spoken in southwestern Siberia, along the tributaries of the Yenisei and Ob rivers, in the Yamal-Nenets Autonomous District, and in the Krasnojarskij Krai. The author points out that the language is critically endangered, currently spoken by a handful of elderly people, with no intergenerational transmission. Around two-thirds of the people who identify as Selkup (3,527 according to the latest census) have shifted to Russian.

Wagner-Nagy offers an informative discussion of her data sources. Her study is predominantly based on corpora—the Selkup Language Corpus and INEL Selkup corpus—which together reflect three dialectal groups: northern, central, and southern. The work is grounded in the functional-typological literature. After an informative yet concise overview of pertinent works on the encoding of predicative possession, the author proceeds with her analysis. For her classification of predicative possessive constructions in Selkup, Wagner-Nagy relies mostly on Heine 1997 and 2001.

The article can be said to have two goals. One is to exploit the framework presented in Heine 1997 and 2001 for the analysis of the Selkup data. The other is to examine in detail the constructions Wagner-Nagy considers central for predicative possession in Selkup.

The following can be said as regards the first goal. The author maintains that predicative possession in Selkup is encoded by a Location, as in (37a), and by a Topic Schema, as in (37b); the Genitive Schema is mentioned too, but its use appears very limited—it is illustrated by two variants of a single example, one of which is shown in (37c).

(37) a. Predicative possessive construction based on the Location Schema

tab-i-stja-n-naːn je:-qa-n neː-t. (Selkup, Middle Ob dialect)
s/he-EP-DU-GEN-ADE be-AOR-3SG daughter-3SG.POSS

'They have a daughter.'

b. Predicative possessive construction based on the Topic Schema

ukkɨr qup 27 kanak-tɨ e-ŋa. (Taz dialect)
one person 27 dog-3SG.POSS be-AOR.3SG

'A man has 27 dogs.'

(Erdélyi 1969: 31/a; cited in Wagner-Nagy's chapter, p. 219)

c. Predicative possessive construction based on the Genitive Schema

Ukkɨr naľa-tɨ ɔːmti-ľ qoː-n…. (Taz dialect)
one daughter-3SG.POSS horn-ADJVZ chief-GEN

'The tsar has a daughter….'

Wagner-Nagy argues against scholars who claim that there is a transitive verb of possession similar to *have*/*habeo* in Selkup that originates from the verb 'keep'. She states that when verbs such as 'hold', 'keep', or 'take' start to be used with kinship terms and inalienables such as body parts, then they can be considered truly grammaticalized as *habeo*-type verbs. Wagner-Nagy also rules out the conjunctional use (i.e., Companion Schema, e.g., *X with Y*) as

a conceptual source for predicative possessive constructions in Selkup. She brings up the fact that such constructions are generally not observed in Uralic languages, so if they were to be acknowledged for Selkup, the language would stand out as an odd one in the family. In addition, she also cites frequency of use, e.g., the fact that constructions of this kind are only marginally used to express possession, and even then only with a handful of lexicalized forms.

As indicated above, two constructions appear most relevant for the encoding of predicative possession in Selkup: (i) those based on the Location Schema and (ii) those based on the Topic Schema. The first group is analyzed in terms of the case marking of the possessor, the use of possessive suffixes on the possessee, word order, and negation. The second group is analyzed in terms of the use of possessive suffixes and word order. The author brings up the fact that predications of possession based on the Topic Schema are mainly encountered under negation but offers no further discussion on this aspect.

In predications based on the Location Schema, we observe dialectal variation as regards the case marking of the possessor. In the central and southern Selkup dialects, this constituent is marked by the genitive case; in the northern dialect, it is part of a postpositional phrase.

The following can be said about possessive predications based on the Location Schema. As indicated by the data in (37a), the predication includes a constituent marked by a locative case that encodes the possessor, a form of the verb 'be', and the possessee. If inalienable, the possessee has to be marked by the possessive suffix. The possessive suffixes indicate the person and number of the possessor.

The issue of inalienability requires further specification. Apparently, the distinction applies to humans only. There are plenty of examples in the article where possessive suffixes are not used with body parts and kinship terms. This is motivated by the fact that these are cases where the parts do not belong to humans, as in (38) below, where *haj* 'eye' is not marked by a possessive suffix when belonging to a crucian (a species of fish).

(38) tudo-n-nan šidi haj e-ja. (Selkup, Vasyugan dialect)
crucian-GEN-ADE two eye be-AOR.3SG
'… the crucian has two eyes.'

Wagner-Nagy points out that the word order of sentences encoding predicative possession is the exact opposite of the one observed in locative statements since in the latter the locational element does not usually occur in initial position. Inverse-locative predications are commonly used for the encoding of existential and potentially also possessive constructions, so this is in line with well-known crosslinguistic tendencies (cf. Creissels 2014, 2019).

The other major way of encoding predicative possession in Selkup is by using constructions based on the Topic Schema, as in (37b) on the previous

page. In these constructions, the possessor appears unmarked in topic position, while the possessee comes in the rheme. Both semantic and syntactic factors appear to govern the use of the possessive suffixes. The data are not entirely clear, but the author seems to think that animacy rather than alienability governs the use of possessive suffixes in this construction. However, if the possessor is omitted, then possessive suffixes are used even with inanimate possessees, (39).

(39) nuŋa-tɨ ɛ-ppa. (Selkup, Vasyugan dialect)
tambourine-3SG.POSS be-PAST.REP.3SG
'He had a tambourine.'

The possessive suffixes index the person and number of the possessor. The person and number of the possessee are indexed on the verb 'be'.

Negation is expressed by a special negative existential in all constructions under discussion, regardless of the conceptual schema they build on. The form of the negative existential varies depending on dialect—*ťangu-/čangu-* in the southern dialect and *čaŋki-* in the northern dialect. In addition, the Russian negative existential *net* is borrowed in the southern dialects. It shows a high degree of integration in the language in that it appears with pertinent morphological marking, such as aorist and person/number marking.

(40) a. taššu-k, miː-nan poː ťaːg-wa. (Middle Ob dialect)
cold-ADV we-DU.ADE tree NEG.EX-AOR.3SG
'It is cold and we do not have wood.'

b. a imaqota qəːli-tɨ čäːŋka. (Taz dialect)
but elderly.woman fish-3SG.POSS NEG.EX.3SG
'But the elderly woman did not have any fish.'

c. tab-nan or-t nʲetu-pa.
s/he-ADE force-3SG.POSS NEG-AOR.3SG
'He had no force.'

The use of special negative existentials, the tendency for them to be borrowed, and finally, the co-existence of several variants conform to a very widespread crosslinguistic tendency (cf. Veselinova 2013 for a typological overview and Veselinova 2015 for Uralic).

Chapter 10 is closed by a summary of the structural characteristics, e.g., case marking of the possessor and word order in the Locative and Topic constructions, together with an overview of their dialectal variation. It would have been helpful to see features such as possessive suffixes as well as ne-

gation presented in the summary table. A substantive part of the article is devoted to them, but they are missing from the table.

I would like to emphasize that chapter 10 offers a very informative overview of the encoding of predicative possession in Selkup, which is not only descriptively adequate but also theoretically well reasoned, with a solid ground in cognitive grammar. At the same time, I cannot help noting that a lot of effort is devoted to discarding the existence of specific conceptual schemas such as the Genitive and the transitive schema whereby a verb such as 'have' is used to encode predicative possession. The data for both of these schemas are highly restricted. On the other hand, the issue of alienability distinctions as well as the factors that condition the use of possessive suffixes remain open-ended. Given that the language is critically endangered, it seems to me that gaining further understanding into this problem is much more important than ruling out the use of conceptual schemas that are clearly marginal in the language.

In a stub entitled Chapter 11, the editors offer a summary of the ideas presented in the book. It is clear that the works collected here reflect an impressive variety of schools in linguistics and likewise very different approaches to predicative possession. Readers can delve into analyses where various components of these constructions are discussed. A topic brought up in several articles is the marking of the possessor and the possessee under affirmation and under negation. A theme that recurs in a variety of interpretations and approaches in the book is the unity and distinction between locatives, existentials, and possessive predications; see, for instance, Kagan (ch. 4) for a set-theoretical semantic approach and Vilkuna (ch. 6) for a perspective from construction grammar. Using formal semantic and syntactic analysis, Dalmi successfully draws parallels between the argument structure of predicative possessive predications in Hungarian and dyadic perception predicates such as 'please'. We also find a wealth of data on the encoding of predicative possession in a number of understudied languages such as Belarusian from the Slavic group and Mari, Komi-Permyak, Udmurt, and Selkup from the Uralic family.

There is no doubt the book has a lot of merit and includes highly commendable work. At the same time, I find its diversity to be also a source of weakness. A unifying red thread that brings the book together is completely missing. There is no effort to work out an outline of the domain of predicative possession that could be the common denominator to all contributing authors.

There is also a certain amount of imbalance in both the theoretical treatments and the data presented for specific languages. The editors point to the lack of theoretical work on most Uralic languages, except Hungarian and Finnish, and express hope that this is a fruitful direction for future research. I would like to add to this a more balanced data set for the languages under discussion. For instance, for Polish and Russian, mainly the nominal components

of the predicative construction are discussed, in terms of their case marking. There is no data on the encoding of the various sub-domains of possession that corresponds to the data presented for most other languages in the book. The datasets included in the book are not really comparable. This is something that can be remedied in a future endeavor.

The treatment of negation in predicative possessive constructions is largely restricted to discussions of the Genitive of Negation. Most languages in the book use a negative existential, which tends to be a special form with identifiable semantic profile and uses (cf. Veselinova 2013). Given that the use of negative existentials reflects a notably widespread crosslinguistic tendency and there are sound reasons to postulate negative existence as a separate semantic domain (cf. Veselinova 2013, 2016), I am surprised the discussion of negation is not contextualized within broader crosslinguistic research.

There are also a number of form-related issues that I list below.

- Language classification

  Apparently, it has been up to each author to choose the language classification they use. This leads to a number of discrepancies. For instance, the book is entitled *Approaches to Predicative Possession: The View from Slavic and Finno-Ugric*, but in chapter 10, Wagner-Nagy states that Samoyedic languages are not Finno-Ugric.

- Abbreviations and presentation conventions

  - A section on presentation conventions would have been helpful. For example, it is unclear what a question mark in front of a sentence indicates:
    - Is it the case that the sentence is not accepted by all speakers?
    - Or is it that it is downright ungrammatical?
  - The use of asterisks and brackets in examples, as well as pound signs, is never explicated. It should have been, as they are used differently in different schools of linguistics.
  - Each chapter has its own abbreviation list. The introduction does not have any although some abbreviations are used. All this is impractical and makes reading cumbersome. An edited volume should have had a unified list of abbreviations.
  - Generally, it is common practice in crosslinguistic work to adhere to the Leipzig Glossing Rules. This practice is not followed here.
  - In chapter 2, N stands for both neuter gender and for a category

N mainly associated with genitive case in Pesetsky's framework. This is very tasking for the reader.

- Some chapters use abbreviations that are not included in their respective abbreviation lists.

- References
  - Each chapter has its own reference list. This makes looking up references cumbersome. Even if the book is made available as an e-book, an edited volume should still have a unified reference list.
  - Many references have incomplete information, and I had to look them up.

- Proofreading and typesetting
  - There are typos all throughout the book. Some of them are mentioned below:
    - page 11, example (2): 'Maria is not reading a book, but a newspaper' should have been 'Maria is not reading a newspaper, but a book'
    - page 12, example (3b): 'Maria is helping her daughter' should have been 'Maria is not helping her daughter'

    I understand these errors most likely result from copy-and-paste operations, but at the same time, having them at the very opening leaves a bad impression.
    - page 14, example (12): the Cyrillic alphabet is wrongly referred to as the Russian alphabet.
    - page 73: the Russian name *Коля* is transliterated in two different ways in adjacent examples: *Kolia* and *Kolja*. While this is a minor detail, the impression such examples leave is of sloppy proofreading.
    - page 213: there is a reference to §3.2, which does not exist. Eventually, the reader finds out that the intended reference is to §2.2.
- Modern word processors and typesetting systems allow footnotes, so it is not clear why endnotes were chosen.
- It would have been helpful to show the locations of the lesser-known languages, such as, for instance, Meadow Mari, Komi, Udmurt, and Selkup, together with the places where speakers were interviewed.

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