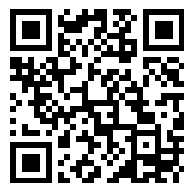

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**[Formal]
Approaches
to [Slavic]
Linguistics**

*The
Connecticut
Meeting
1997*

Michigan Slavic Publications

Formal Approaches to Slavic Linguistics 6, 1997

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The Connecticut Meeting 1997

edited by
Željko Bošković,
Steven Franks,
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The present volume contains a selection of papers presented at the sixth meeting of *Formal Approaches to Slavic Linguistics* which took place from 9-11 May, 1977, at the University of Connecticut, Storrs. We wish to thank the University of Connecticut for sponsoring *FASL 6*. Funding is gratefully acknowledged from the following sources at UConn: The Research Foundation, The Graduate Student Senate, and Office of the Dean of the College of Liberal Arts and Science.

Many individuals participated in the organization of the conference. First and foremost, we wish to thank Eva Bar-Shalom, who joined us on the steering committee and who, among other things, organized the poster session. We would also like to express our gratitude to all graduate students of UConn's Department of Linguistics, who played an indispensable role in the organization of *FASL 6*. We are particularly grateful to Kazuko Hiramatsu, Kazumi Matsuoka, Satoshi Oku, Suba Rangaswami, Eric Shortt, and especially Sandra Stjepanović, for her superb effort in organizing the conference. We also wish to thank Jindřich Toman of the University of Michigan, whose inspiration established *FASL* in 1992, for overseeing the production of this volume.

There were 25 papers presented at *FASL 6*, three of which were part of a poster session, and three of which were contributed by the invited speakers, Christina Bethin, Steven Franks, and Howard Lasnik. Each abstract was anonymously refereed by five scholars, whose time and expertise is greatly appreciated. All participants in the conference were invited to submit papers for publication in the

proceedings. Unlike most conference proceedings, however, drafts submitted to FASL proceedings are edited for content and style before preparation of final camera ready versions. The papers in this volume were edited by us, with assistance on some manuscripts from Piotr Bański, Stuart Davis, and Ronald Feldstein, for which we are grateful.

The following papers were presented at FASL 6 but were not submitted for inclusion in this volume: S. Avrutin and M. Babyonyshev, "Two Modes of Discourse Representation and the Two Types of Root Infinitive Constructions that Instantiate them in Russian"; M. Babyonyshev, "Covert Feature-Checking and Conjunction Agreement in Russian"; J. Bailyn, "Object Shift in Russian and Surface Word Order"; R. Izvorski, "On the Nature of Wh-Infinitival Complements of Possessive and Existential Predicates"; M. Lambova, "Participle Auxiliary Orders in Bulgarian and the PF-Component of Grammar"; C. Piñón, "Verbs of Motion in Polish, II: The Role of Direction"; I. Sekerina, "Late Closure Principle in Processing of Ambiguous Russian Sentences"; S. Vukić, "Dispositional Reflexive Construction in Russian and Serbo-Croatian."

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Contents

Nike V. Agman Nasal Assimilation in Polish: The Case of Nasal Vowels	1
Leonard H. Babby Subject Control as Direct Predication: Evidence from Russian	17
Jonathan Barnes Bulgarian Liquid Metathesis and Syllabification in Optimality Theory	38
Christina Y. Bethin Polabian Prosody	54
Vladimir Borschev and Barbara H. Partee Formal and Lexical Semantics and the Genitive in Negated Existential Sentences in Russian	75
Barbara Citko On Multiple WH Movement in Slavic	97
Miriam Engelhardt and Helen Trugman D as a Source of Adnominal Genitive in Russian	114
Steven Franks <i>Parameters of Slavic Morphosyntax</i> Revisited: A Minimalist Retrospective	134
Stephanie Harves The Syntax of Negated Prepositional Phrases in Slavic	166
Howard Lasnik Exceptional Case Marking: Perspectives Old and New	187
James E. Lavine Null Expletives and the EPP in Slavic: A Minimalist Analysis	212

Svetlana McCoy Individual-Level Predicates and Pronoun Doubling in Colloquial Russian	231
Ljiljana Progovac 'Avoid Conjunction', Adjunction, and the 'Coordination of Likes' Constraint	252
Sandra Stjepanović On the Placement of Serbo-Croatian Clitics: Evidence from Clitic Climbing and VP-Ellipsis	267
Danijela Stojanović Theta-Role Assignment in On-line Processing of Free Word Order Language	287
Jindřich Toman A Discussion of Resumptives in Colloquial Czech	303
Michael Yadroff and Loren Billings The Syntax of Approximative Inversion in Russian (and the General Architecture of Nominal Expressions)	319

Nasal Assimilation in Polish: The Case of Nasal Vowels

Nike V. Agman

Yale University

1 Introduction

The surface complexity of the Polish nasal vowels, the back nasal vowel [ɔ̃] and the front nasal vowel [ɛ̃] (orthographically *ą* and *ę* respectively), has given rise to a variety of proposed underlying representations (UR) in the literature. Gussmann (1980) and Rubach (1984), among others, have suggested that Polish nasal vowels are best represented by sequences of oral vowel plus coronal nasal consonant ([on] and [en]). Bethin (1992) and Czaykowska-Higgins (1992), on the other hand, offer that Polish phonology is better served with nasal vowels depicted as single phonological units, because they “pattern as oral vowels for purposes of some phonological rules” (Czaykowska-Higgins 1992:140f), including nasal vowel backing and nasal vowel deletion in *-ną-* stem verbs. Since the works of Bethin and Czaykowska-Higgins deal well with the UR of nasal vowels and their surface realizations before stops, the goal of this paper is not to deviate drastically from them. Rather, the present work attempts to construct a cohesive analysis of the issues surrounding the Polish nasal vowels, including the motivations for the phonetic production of the nasal diphthongs [oɨ̃] and [eɨ̃] and the word-final loss of nasality. The current analysis also attempts to interpret optionality of nasal assimilation rules as a by-product of syllable structure.

There are two sets of historically distinct data which enter into the present discussion: the orthographically marked historical nasal vowels and the sequences of oral vowel plus nasal consonant of more

recent foreign borrowings. The origin of historical nasal vowels in Polish is in oral vowel plus nasal consonant sequences. The phonetically nasal vowel became phonemically nasal when the consonant was lost, the result of a “general tendency [in Late Proto-Slavic] to tolerate only open syllables” (Carlton 1990:126). The historical nasal vowels are investigated in four distinct environments (before continuants, before noncontinuants, before laterals and word-finally). The two historical nasal vowels [ɔ̃] and [ɛ̃] have parallel, yet distributionally different surface realizations. They surface as (i) what Schenker (1954:469) qualifies as nasal diphthongs ([oŵ] and [eŵ]), as (ii) sequences of oral vowel plus homorganic nasal consonant ([oN], [eN]), and as (iii) simple oral vowels ([o], [e]). The back nasal vowel can also be realized as the oral diphthong [ow]. The sequences of oral vowel plus nasal consonant of recent borrowings undergo similar nasal assimilation rules in all environments but word-finally.

2 Nasal Assimilation

One of the more straightforward phonological situations for a nasal vowel is before a noncontinuant. This is perhaps the basis of the representations of Gussmann and Rubach. Examples of nasal assimilation for both the front and back nasal vowels are given in (1).

(1) *Examples of Nasal Assimilation*

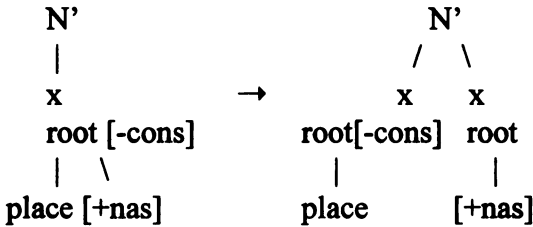
a. [ɛ̃] → [eN] / __ [-cont]	b. [ɔ̃] → [oN] / __ [-cont]
<i>ręka</i> [reŋka] ‘hand’ N. sg.	<i>rąk</i> [roŋk] ‘hand’ G. pl.
<i>ręce</i> [rence] ‘hands’ N. pl.	<i>ząb</i> [zomp] ‘tooth’ N. sg.
<i>zęby</i> [zembɨ] ‘teeth’ N. pl.	<i>ciąć</i> [ćońć] ‘cut’ Impf.
<i>pięć</i> [p’eńć] ‘five’	

In Gussmann and Rubach's work, such phenomena are well explained by the positing of an underlying oral vowel plus coronal nasal consonant where the coronal nasal consonant undergoes feature-changing assimilation in place to the following stop.

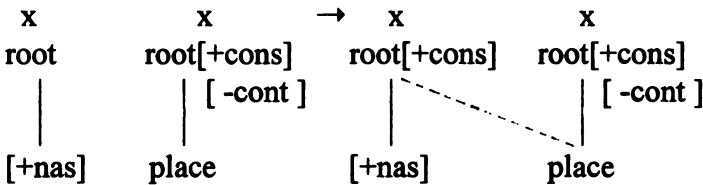
Bethin (1992:76-78), however, in keeping with her sup-position that historical nasal vowels are single units suggests the two-step process in (2) to explain the place assimilation of the nasal.

(2) *Bethin's (1992:76-78) mechanism for Nasal Assimilation*

a. *Nasal Vowel Decomposition*



b. *Nasal Assimilation*



In Nasal Vowel Decomposition the “nasal portion of the nasal vowel” (Bethin 1992:76) is assigned a second timing slot, and in Nasal Assimilation place features spread onto the “unspecified [for place] nasal segment” (Bethin 1992:77). In contrast to Gussman and Rubach, as she does not presuppose a coronal nasal consonant, Bethin's assimilation mechanism is feature-filling rather than feature-changing. Czykowska-Higgins notes that the nasal node is placeless

because it is “completely predictable from its environment” (1992:140). It is important to keep in mind that this place assimilation of the bare nasal segment of the nasal vowel to the following stop is mandatory.

3 Nasal Vowels as Nasal Diphthongs

This elegant analysis works well for the pre-noncontinuant environment, but it is not incorporated into the pre-continuant analysis by either Bethin or Czaykowska-Higgins, who imply by their use of default rules that nasal assimilation does not apply in pre-continuant position. Bethin provides a default rule which assigns the nasalized labiovelar glide [w̃] to the unspecified nasal segment (1992:78), producing [oŵ] and [eŵ] in pre-continuant position, examples of which are given in (3).

(3) *Examples of Nasal Diphthongs*

a. [ɛ] → [eŵ] / __ [+cont]	b. [ɔ] → [oŵ] / __ [+cont]
<i>gęś</i> [geŵś] ‘goose’ N. sg.	<i>wąsy</i> [voŵsɨ] ‘whiskers’ N. pl.
<i>węch</i> [veŵx] ‘smell’ N. sg.	<i>mąż</i> [moŵʂ] ‘husband’ N. sg.
<i>kęs</i> [keŵs] ‘bite’ N. sg.	<i>brąz</i> [broŵs] ‘bronze’ N. sg.

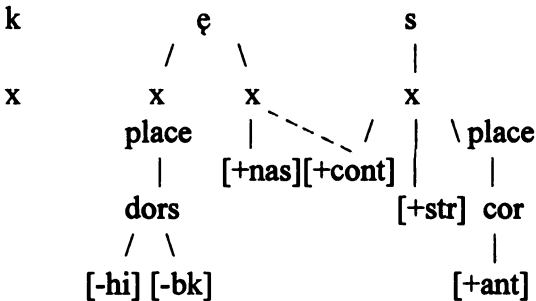
This default rule is last in her ordering of nasal vowel rules and thus applies only after the Nasal Assimilation rule discussed above has failed to apply. In pre-continuant position, Czaykowska-Higgins (1992:141) proposes a two-step mechanism, Glide Formation, which similarly produces the nasalized glide [w̃] as a default structure.

An attempt to incorporate the pre-continuant rules into the pre-noncontinuant scenario immediately encounters feature incom-

patibility problems. The place feature [coronal] does not spread onto the bare nasal segment. It is expected to produce the coronal nasal consonant [n] which is not phonetically realized in Contemporary Standard Polish (CSP) in the environment before continuants. The stricture feature [+strident] does not spread either, nor is the resultant segment recognized in the world's languages because of strident-nasal coarticulation air-flow constraints (Ladefoged and Maddieson 1996:134). The produced segment [w̃] does, however, share the stricture feature [+continuant] with the following consonant.

If one looks at nasal assimilation as primarily a spreading of stricture and only secondarily a spreading of place features, then the process can be modeled as in (4).

(4) *Spreading of Stricture*



The stricture feature [+cont] spreads leftward, but the stricture feature [+str] is blocked as a result of the incompatibility of the features [+nas] and [+str]. The resulting continuant nasal segment surfaces as the nasal glide [w̃], the default of Bethin's and Czaykowska-Higgins's rules. Rubach similarly suggests that "Nasal Gliding [is] a rule spreading [+cont] from the fricative" to the nasal (1994:129). To accommodate his proposed UR (of oral vowel plus coronal nasal

consonant), Rubach's Nasal Gliding mechanism is feature-changing, replacing the [-cont] designation of the coronal nasal by [+cont]. He proposes a redundancy rule which interprets [+cont] nasals as nasal glides, but provides no mechanism for coronal deletion.

4 Optionality and Syllable Structure

Both Bethin and Czaykowska-Higgins note that another class of data should be considered in conjunction with the historical nasal vowels, the optionally nasalized foreign borrowings. Examples of these are given in (5).

(5) *Optional Nasal Gliding*

sens	[seŋs] ~ [sens]	'sense'
konflikt	[koŋflikt] ~ [konflikt]	'conflict'
tramwaj	[traŋvaj] ~ [tramvaj]	'streetcar'

Czaykowska-Higgins (1992) notes that the existence of a placeless nasal segment in the UR of the nasal vowels does not necessarily correlate to the lack of a coronal nasal (as is the case in some other languages) in the underlying phonological inventory of Polish: the coronal nasal [n] in word-final position has an underlying place specification. She argues that in "word-internal position before a continuant [the coronal nasal of foreign borrowings] becomes a glide optionally, but [the placeless nasal segment of nasal vowels] becomes a glide obligatorily" (1992:142).

In order to accommodate this apparent optionality of nasal gliding in foreign borrowings, Czaykowska-Higgins suggests an optional Coronal Debuccalization rule for word-internal coronal nasals, which

leaves them placeless. According to her scheme, they undergo either nasal assimilation or Glide Formation, depending on their environment (1992:143). Bethin provides a similar optional Coronal Deletion rule (1992:70) which leaves the newly placeless nasals amenable to the feature-filling nasal assimilation rule, mandatorily applied to the historical nasal vowels. This two-step feature-deleting and feature-filling mechanism is effectively a feature-changing mechanism.

Within the context of foreign borrowings, Czaykowska-Higgins says little about syllable structure, except in her references to word-internal and word-final (or pre-pausal) nasal consonants. Her Coronal Debuccalization rule is applicable only word-internally and is blocked word-finally. Investigating syllable structure as a possible basis for this optionality provides interesting results. If *sens* 'sense' N. sg., for example, is phonetically realized as [seŋs], then the word-syllable *sens* has a complex nucleus [eŋ] and a simple coda [s]. If, however, it is realized as [sens], then it has a simple nucleus [e] and a complex coda [ns]. If the UR of foreign borrowings is indeed different than that of historical nasal vowels (as is suggested by the optionality of assimilation), it is necessary to include other possible feature-changing assimilation in the analysis.

In positing a coronal nasal in the UR, in addition to the leftward spread [+cont] from the fricative to the nasal, the rightward spread of [-cont] from the nasal to the fricative, producing the coda cluster [nts] should also be considered. Further phonetic study is necessary to determine the actual realization of the coda cluster in *sens*. Available native sources rejected the phonetic production of a coronal nasal in the monosyllable *sens*. The genitive singular *sensu*, however, does not

contain the complex coda of *sens*. The choice of syllable structure is now between [seŋsu], with the complex nucleus [eŋ], and [sensu], with the simple nucleus [e] and simple coda [n]. Native sources produced both [seŋsu] and [sensu]. These data suggest that while nasal gliding is mandatory in the syllable coda, it becomes optional across the syllable boundary.

5 Denasalization and Word-final Position

In CSP, there are two environments in which the front nasal vowel [ɛ̃] is denasalized to [e]: before the lateral consonants [l] and [ɫ] (the lateral glide /w/ derived from [l]) and in word-final position. The back nasal vowel [ɔ̃] is denasalized only pre-laterally to [o] and retains its nasal diphthong quality in word-final position. Dialectally, however, the back nasal vowel is denasalized to [ow] in word-final position and in “slow speech” (Schenker 1954:469), the front nasal vowel may appear as the nasal diphthong [eŋ].

5.1 Pre-lateral denasalization

Mandatory denasalization in the pre-lateral environment implies a blocking of feature spread onto the structureless nasal segment. In the examples in (6), the nasal vowel is reduced to an oral vowel with the surfacing of no nasal segment.

- (6) a. [ɛ̃] → [e] / __ [+lat] {[l], [ɫ]=/w/}
- | | | |
|------------------|------------|----------------------|
| <i>krzyknęła</i> | [kʂɨknewa] | ‘she shouted’ (pf.) |
| <i>zaczęła</i> | [začewa] | ‘she started’ (pf.) |
| <i>krzyknęli</i> | [kʂɨkneli] | ‘they shouted’ (pf.) |
| <i>zaczęli</i> | [začeli] | ‘they started’ (pf.) |

- b. [ɔ] → [o] / __ [+lat] {[ɫ]=/w/}
- | | | |
|-----------------|------------|--------------------|
| <i>krzyknął</i> | [kʂiɫknow] | ‘he shouted’ (pf.) |
| <i>zaczął</i> | [začow] | ‘he started’ (pf.) |

This has two major implications. First, the stricture feature [+lat] is incompatible with [+nas] in Polish, since they produce no pronounceable structure. Second, the nasal segment and oral segment of the complex nasal vowel must be separable since there is no nasalization of the oral vowel in the surface structure. The incompatibility of lateral and nasal is also evidenced in lateral blocking of nasal spread in vowel harmony languages (Piggot 1988).

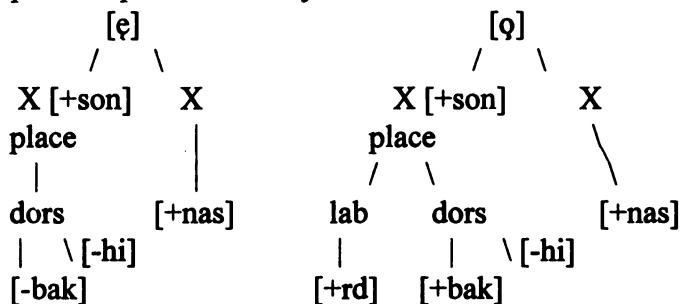
5.2 Word-final Position

Denasalization of nasal vowels in word-final position appears to be optional. The examples in (7) attest that this is the only environment wherein the surface realizations of the two nasals are not parallel.

- (7) a. 1. [ɛ] → [e] / __ # 2. [ɛ] → [eɰ̃] / __ # (in slow speech)
- | | | | |
|-------------|----------|---------|--------------------|
| <i>idɛ</i> | [ide] or | [ideɰ̃] | ‘I’m going’ |
| <i>chcɛ</i> | [xce] or | [xceɰ̃] | ‘I want’ |
| <i>siɛ</i> | [sé] or | [séɰ̃] | reflexive particle |
- b. 1. [ɔ] → [oɰ̃] / __ # 2. [ɔ] → [ow] / __ # (dialectally)
- | | | | |
|-------------|------------|--------|---------------------------|
| <i>idɔ</i> | [idoɰ̃] or | [idow] | ‘they’re going’ |
| <i>chcɔ</i> | [xcoɰ̃] or | [xcow] | ‘they want’ |
| <i>tɔ</i> | [toɰ̃] or | [tow] | ‘this one’ fem.sg. instr. |

This fact could imply that the nasal vowels [ɛ̃] and [ɔ̃] are indeed different in their respective UR's. The autosegmental representations in (8), however, suggest that if rightward feature-filling spread of [+lab] is allowed (from the oral vowel), the nasal segment of the back nasal vowel is provided with a source of stricture and place features.

(8) *Proposed representation of Polish Nasal Vowels*



The lack of a [+lab] designation on the oral component of the front nasal vowel leaves the nasal segment unpronounceable as it has no place or stricture features. The complex nucleus is thus pronounced as the simple oral vowel [ɛ].

The optional pronunciation (in slow speech) of the front nasal as a nasal diphthong, can be analyzed as a reinterpretation of the UR of the front nasal vowel. In this instance, the placeless, strictureless nasal segment is assigned an underlying [+lab] place designation and an underlying [+cont] stricture designation. The optional pronunciation of the back nasal vowel as the denasalized diphthong [ow], is possibly the result of phonotactic considerations. The [+lab] still spreads rightward onto the second timing slot, but the [+nas] feature is deleted. Another dialectal variant of the back nasal vowel, [o], can be analyzed in terms of the total blocking of rightward feature spread.

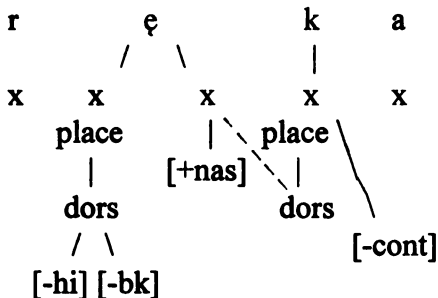
6 Conclusions

The proposed representation of the Polish nasal vowels as given in (8) is based on the work of both Bethin (1992) and Czaykowska-Higgins (1992). The goal of this paper has been to move away from their reliance on unjustifiable default rules to explain a major component of the surface structure of Polish nasal vowels. Two major revisions to their analyses are presented within the body of this paper. The first is the revision and expansion of the mechanism of nasal assimilation to include pre-continuant, pre-lateral and word-final positions, whereas they dealt only with nasal vowels before noncontinuants. The second major revision is the inclusion of a syllable-based theory of spread of stricture features which challenges the previous notions of optionality.

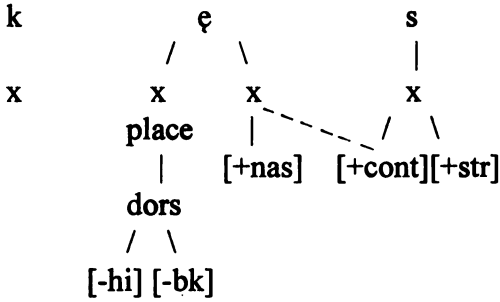
It is suggested here that Feature-Filling Nasal Assimilation (FFNA), shown in (9), is primarily the result of spread of stricture and only secondarily the result of spread of place features.

(9) Feature-Filling Nasal Assimilation

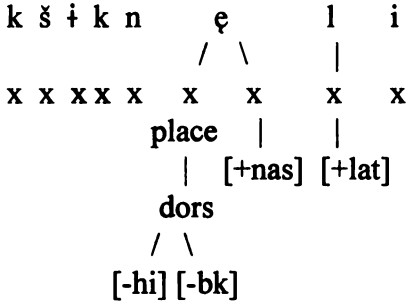
a. Assimilation produces Homorganic Nasals: [reŋka]



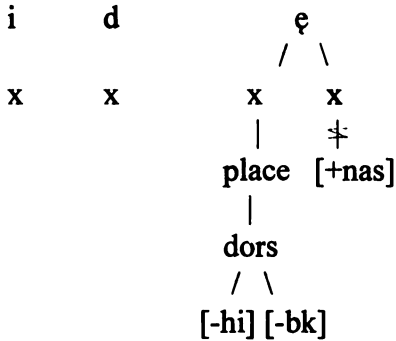
b. *Assimilation produces Nasalized Diphthongs:* [keŋs]



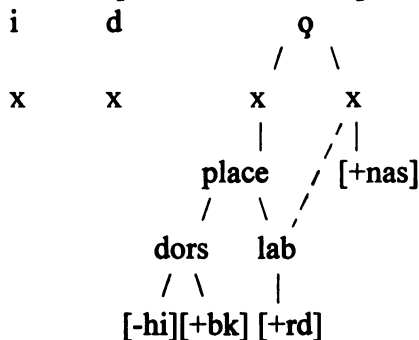
c. *Assimilation produces no surface nasal:* [kʃikneli]



d. *No assimilation:* [ide]



e. *Assimilation produces Nasal Diphthong: [idoũ]*



FFNA applies only to the strictureless, placeless [+nas] segments of the doubly-segmented nasal vowels. Before non-continuants as in (9a), FFNA causes the leftward spread of the stricture feature [-cont] as well as place features from the following stop to the preceding otherwise unspecified nasal segment. Before continuants, FFNA again causes the spread of the stricture feature [+continuant], but not the stricture feature [+strident]. Before lateral consonants, the leftward spread of the stricture feature [+lateral] is blocked as a result of the incompatibility of [+lat] and [+nas] features in Polish. Finally, in word-final position, with no leftward source of features to spread onto the unspecified nasal segment, the front nasal vowel surfaces as the oral vowel [e]. The back nasal vowel, however, with the rightward spread of the stricture feature [+cont] and the place feature [+lab], surfaces as the nasal diphthong [oũ].

It is also asserted here that the optionality of nasal gliding is related to syllable structure and not to word history. A significant percentage of native words with historical nasal vowels are monosyllabic, while a significant percentage of recent foreign borrowings with vowel plus nasal consonant sequences are multi-

syllabic. This has probably contributed to previous arguments about optionality in foreign borrowings and it brings into question the reliability of the optionality claims in the literature. I suggest that the optionality of nasal gliding comes only where the unspecified nasal segment and the conditioning adjacent consonant are divided by a syllable boundary. It is posited that nasal gliding is mandatory in monosyllabic foreign borrowings. Further, optionality appears not to be restricted to foreign borrowings, but is seen in native words such as *język* 'tongue', [jeŵzik] in CSP and [jenzik] dialectally. If optionality is incorporated into the above analysis, it should apply to nasal assimilation as well.

An issue which has been avoided in the discussion to this point is the origin of the place features of the [w̃] in pre-continuant position. The assumption has been made that the pre-continuant surface value of the historical nasal vowels is [eŵ] and [oŵ] based on Schenker (1954). My intuition, however, is that the labial component of the front nasal diphthong is much less perceptible than that of the back nasal diphthong. If this observation can be supported, [eŵ] is an inaccurate phonetic representation.

The back nasal vowel would derive its place features from rightward spread its oral component, thus the [+lab] designation. The front nasal vowel, since it has no labial feature in its oral component, is left unburdened of the task of either inventing labial place features or positing them as underlying. The front nasal place features in pre-continuant position could thus derive from the following continuant which would produce a continuant coronal nasal, similar to [w̃] in articulation, minus the labial component. Alternatively, the front nasal could derive its place features from the oral component

producing an actual mid, front nasal vowel [ẽ]. The non-parallelism of the two historical nasal vowels in word-final position could also be explained by such a schema.

The current project was undertaken in order to arrive at the UR of Polish nasal vowels and, through an autosegmental representation, to assign surface structure without the use of default and other unjustifiable rules. The proposed FFNA attempts to fill this role with the assistance of universal considerations like feature compatibility. While no solid conclusions have been drawn concerning optional nasal assimilation, it is suggested here that optionality is a function of the nasal vowel's position in the syllable and that the data need to be reanalyzed with syllable structure in mind.

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Subject Control as Direct Predication: Evidence from Russian

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1 Introduction

It was assumed in earlier theory that an infinitive complement without an overt subject is a nonfinite clause with a null (PRO) subject. This assumption necessitates a separate module of Control Theory to determine the matrix-clause antecedent of PRO in subject and object control structures. I will argue on the basis of the case assigned to floating quantifiers in Russian infinitive complements that Control Theory can be eliminated since the understood subject of infinitive complements can be predicted in terms of binding, predication, and the matrix verb's c-selection, which are independently motivated components of grammar.

The floating quantifiers *sam* 'himself', *ves'* 'all', and *odin* 'alone' are adjectives that adjoin to VP and agree in case, gender, and number with the subject of the minimal clause containing them. In finite clauses, they thus agree in case with the nominative subject (see (1a)); we shall refer to these quantifiers collectively as SAM. The case agreement of SAM serves a crucial diagnostic function since it enables us to determine the case of the null subject in infinitive clauses.

SAM in standard Russian infinitive complements has the following two initially baffling properties: (i) It is restricted to the nominative and dative cases only (see (1) and (2)); (ii) the dative of SAM in sentences like (1c) and (2b) does not appear to have a dative antecedent to agree with (cf. (1c), where the apparent antecedent of dative *odnomu* is the accusative direct object pronoun *ego*). Both these properties will be shown to follow naturally from the analysis of control I propose below.

- (1) a. **On** ezdit tuda **odin**.
'He:nom goes there alone:nom'
b. **On** ljubit [ezdit' tuda **odin**].
'He:nom loves to-go there alone:nom'
c. **Ona** poprosila **ego** [ne ezdit tuda **odnomu**].
'She:nom asked him:acc not to-go there alone:dat'

(2) a. **My** dolžny [vyžit' **sami**/*samim].

'We:nom must survive ourselves:nom/*dat'

b. **My** dolžny najti sposob [vy žit' **samim**/*sami].

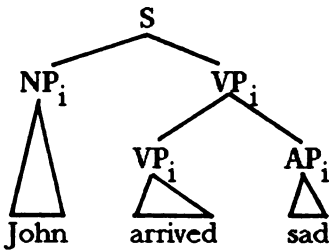
'We:nom must find a-way to-survive ourselves:dat/*nom'

A superficial look at the Russian data suggests that SAM is nominative in subject-control infinitive complements and dative in object-control complements (cf. (1b) and (1c)). But sentences like (2b) demonstrate that this cannot be the correct generalization: the understood subject of both infinitives is the matrix subject, yet SAM is dative, not nominative (cf. (2a)). This paper is devoted to demonstrating that the correct generalization is this: Subject control involves a bare (subjectless) VP infinitive complement, while object control involves an infinitive clause complement with a dative subject. This hypothesis correctly accounts for the case of SAM, which always agrees in case with the subject of the minimal clause containing it.

2 Controlled Adjunct Modifiers and Direct Predication

Williams (1994) accounts for controlled adjunct modifiers like *sad* in (3) in terms of "direct predication" ("i" is the index of an XP's external theta role).

(3)



The external theta role *i* of AP_{*i*} in (3) is vertically bound by the external theta role of the finite VP_{*i*} and is thereby satisfied (saturated); *i* of VP_{*i*} is assigned to the subject NP by main clause predication. Thus the relation between *John* and *sad* is an instance of direct predication: The predicate modifier is related to the subject by vertical binding and predication; the relation is "direct" since

there is no embedded AP-clause with a PRO subject whose antecedent is the matrix subject.

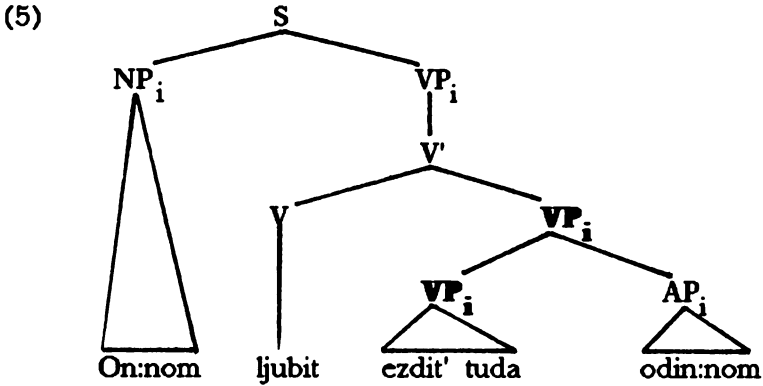
My main hypothesis is that subject control of infinitive complements in Russian also involves direct predication, i.e., subject-control infinitive complements are bare infinitive verb phrases whose external theta role is vertically bound by the matrix verb phrase's external theta role, which is assigned to the subject by main clause predication, just as in (3) (bare infinitive VP is represented as bold face **VP** below). I am thus claiming that subject-control infinitive complements are not clauses and do not have PRO subjects, i.e., the monoclausal structure in (4a) is the correct structure of (1b), not the biclausal structure in (4b). ((4a) accounts explicitly for Comrie's (1974) observation that subject control infinitives involve "cohesion"). Thus in (4a), *on* is understood as the subject of the infinitive complement because the external theta role of the bare infinitive phrase is vertically bound by the external theta role of the finite verb phrase dominating it (vertical binding is a local relation in the sense that a maximal projection cannot intervene between the vertical binder and vertical bindee). The suggestion that infinitive complements are **VP** rather than **S** has been made before (e.g. Culicover and Wilkins 1986; Chierchia 1984; Bresnan 1978; cf. Boškovič 1996); what is new here is the hypothesis that subject-control infinitive complements are bare **VPs** whose external theta role is vertically bound, and the evidence from the case agreement of **SAM** that this hypothesis is correct.

(4) a. On [_{VP_i} ljubit [_{VP_i} ezdit' tuda]].

'He:nom loves to-go there'

b. On [_{VP} ljubit [_S PRO_i [_{VP_i} ezdit' tuda]]]

The bare, monoclausal **VP** analysis of subject-control infinitive complements represented in (4a) correctly predicts that **SAM** in a subject control infinitive complement must be nominative: The only available subject NP for **SAM** to agree with is the matrix subject, which is nominative when the clause is finite. (5) is thus the structure of (1b). (See Williams 1994 for evidence that floating quantifiers adjoin to the matrix VP; Laurencot 1997: 202 has a similar suggestion).



One of the problems with the clausal analysis of subject control represented in (4b) is that, in order to account for the nominative case agreement of SAM, it is necessary to claim that the PRO subject in subject-control infinitive complement clauses is nominative (see Neidle 1988, Babby 1991). Another problem is that PRO here must be obligatory (see Koster 1986:112). Thus not only is PRO not needed to account for subject control, its presence creates problems not encountered by the bare infinitive **VP** analysis.

As we shall see below, Russian provides evidence that object-control infinitive complements in standard Russian are nonfinite infinitive clauses: The infinitive **VP**'s external theta role *i* is assigned to the PRO subject of the infinitive clause by main clause predication. PRO's antecedent is always the matrix object (see Bowers 1993). The structure of (6a) is thus (6b), where PRO is bound by the matrix direct object *ego*. (Boldface **S** stands for an infinitive clause.)

- (6) a. Ona poprosila ego ne ezdit' tuda noč'ju.
'She asked him:acc not to-go there at-night'
b. Ona [_{VP} poprosila ego [**S** PRO_i [**VP**_i ne ezdit' tuda noč'ju]]]

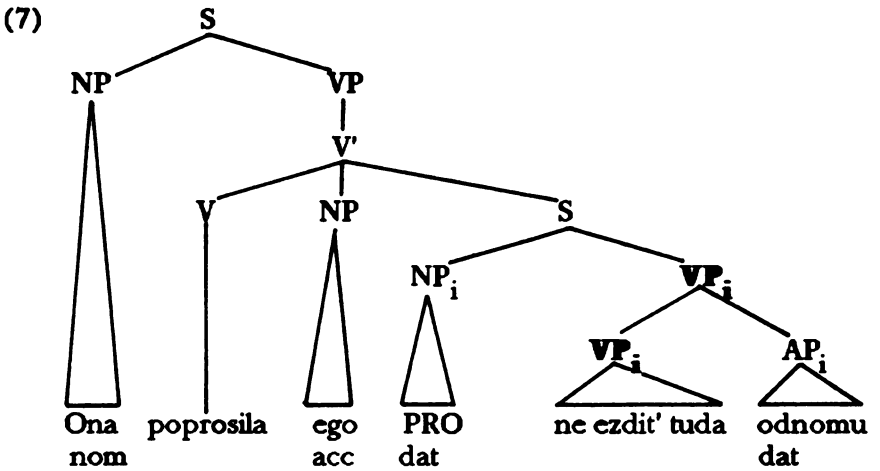
If the analysis of subject and object control I am proposing is correct, there is in fact no need for Control Theory to account for the

understood subject of infinitive complements: binding (both vertical and canonical), predication, and the main verb's c-selection do all the work. When a verb selects a bare **VP** infinitive complement, its understood subject must be the matrix subject (vertical binding involves external theta roles only), giving the effect of "subject control." If the matrix verb selects an infinitive clause as its complement, the infinitive's PRO subject is bound by the proximate matrix object, giving "object control." There appear to be no cases in Russian of a verb that selects a clausal infinitive complement but does not select a matrix object to bind the infinitive's PRO subject, which suggests the following generalization: When a matrix verb selects a bare infinitive complement, its external theta role *i* must be vertically bound, giving subject control. The only way to get the effect of object control is to assign *i* of a bare **VP** to a PRO subject (forming an infinitive clause), which is bound by the c-commanding matrix object, as in (6b).

3 Evidence

The next step is to ask what evidence there is to support the clausal analysis of object control in Russian, i.e., what is the empirical basis for positing a null subject in object-control infinitive complements when we are claiming that there is no subject position in subject-control infinitive complements? In other words, is there concrete evidence for the distinction we are making between absence of an infinitive complement's subject vs. a null (covert) one, i.e., **VP** vs. [PRO **VP**]_S? The crucial evidence for this distinction comes from the dative case of SAM in object-control infinitive complements like (1c). More specifically, given that SAM must agree with the subject of its clause in case, we can demonstrate that object-control infinitive complements are clauses with PRO subjects if we can provide independent evidence that the putative PRO subject is dative, i.e., that infinitive clauses have dative subjects. According to this proposal, the structure of (1c) is (7): *odnomu* agrees in case with the dative PRO subject of its clause, which is bound by the accusative matrix object *ego*. (Our hypothesis correctly predicts that if the matrix clause in a sentence like (1c) is passivized, SAM must be nominative.)

If infinitive clauses have dative subjects in Russian, then we have a natural explanation for the initially baffling fact noted above that SAM is restricted to nominative and dative case: standard Russian has two kinds of clauses: finite clauses, which have nominative subjects, and infinitive clauses, which have dative subjects. Since SAM agrees in case with its subject NP, the bare-VP analysis of subject control and the clausal analysis of object control correctly predict that SAM in infinitive complements can be either nominative or dative (see §7).



Summary: The morphological rule that derives infinitives from verb stems produces a bare infinitive **VP** whose external theta role must be satisfied, which can be accomplished in one of two ways: by vertical binding if possible; if not, then, as a last resort, by assigning it to a subject NP, forming an infinitive clause. This conception of infinitive control presupposes the kind of bottom-to-top derivation proposed in Chomsky 1995 (see Marantz 1995).

4 Evidence That Infinitive Clauses Have Dative Subjects

When an infinitive clause in Russian has an overt subject, it is invariably in the dative case. In the following examples, the infinitive clauses with overt dative subjects are in square brackets. The dative case here is a selectional property of the infinitival

suffix and, therefore, a preposition is not needed to license it (cf. for in English; see Babby 1997a for discussion).

- (8) [**Tebe** ujeti na pensiju] značilo by kapitulirovat' pered vragom.
 you:dat to-go on pension mean M to-capitulate before enemy
 '[For you to retire] would mean capitulating to the enemy'
- (9) Možet, [**mne** vzjat' ego s soboj].
 perhaps me:dat to-take him:acc with self
 'Maybe I should take him with me'
- (10) Začem bylo [**Ivanu** pytat'sja otravit' Ninu]?
 why was:n Ivan:dat to-try to-poison Nina:acc
 'Why should Ivan have tried to poison Nina?'
- (11) Vy sami smožete rešit', [vospol'zovat'sja **vam** našimi
 uslugami ili net.
 'You can decide yourself [whether or not (*for you) to use our
 services]'

The dative pronoun *tebe* in (8) is the subject of the infinitive *ujti*. In (9), the dative subject *mne* binds the reflexive pronoun *soboj* just as the nominative subject in finite clauses normally binds anaphors.

Sentences in (12) and (13) are crucial: here we see infinitive clauses in which SAM agrees in the dative case with the overt dative subject.

- (12) **Vam** **samoj** ne spravit'sja.
 you:dat yourself:dat not to-manage
 'You won't be able to manage yourself'
- (13) Počemu by **mne** ne prodat' ix **samomu**.
 why M me:dat not to-sell them:acc myself:dat
 'Why shouldn't I sell them myself'

If the overt subject of an infinitive clause is dative, as in (8)-(13), then so is the null (PRO) subject: the case marking of an NP does not depend on the overtness of its head. Thus the so-called "second" or "orphan" dative case of SAM in object-control sentences like (1c) is to be explained in precisely the same terms that the case of SAM is explained in finite clauses and infinitive clauses with overt dative subjects: SAM simply agrees in case with the subject of the clause containing it. The case of SAM therefore

provides particularly convincing evidence that object-control infinitive ccomplements are nonfinite clauses with null dative subjects, i.e., that (7) is indeed the correct structure for (1c).

Summary. I have argued above that:

- SAM always agrees in case, number, and gender with the subject of the clause containing it.
- Subject-control infinitive complements are bare infinitival **VPs** and, therefore, SAM here is nominative if the matrix clause is finite since it agrees in case with the matrix subject (see (5)).
- object-control infinitive complements are infinitival clauses and, therefore, SAM here is dative since the subject NP in Russian infinitive clauses is dative (see (7)).

This analysis of infinitive complement control in Russian is convincing because it makes a surprisingly large number of correct predictions; we shall consider the most striking of them in the following sections.

5 Predictions: Subject Control Infinitive Complements

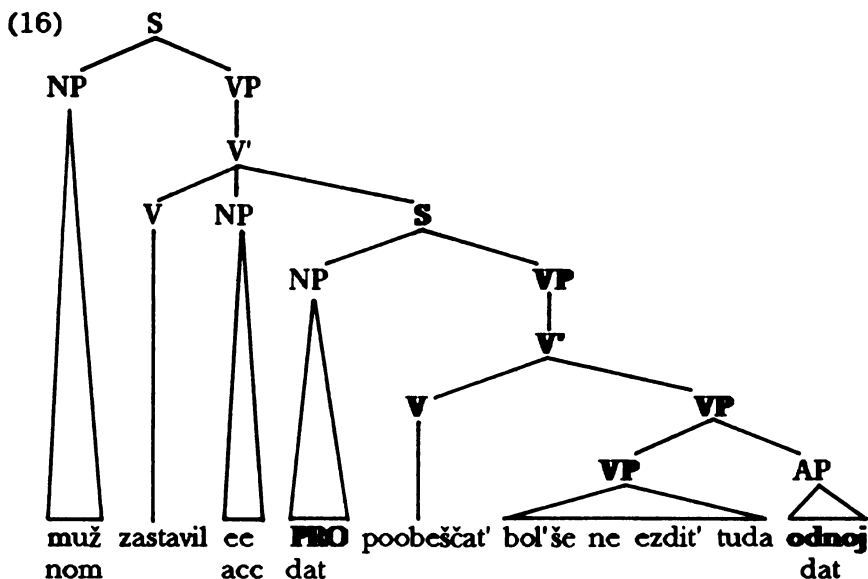
Given the analysis of control proposed above, it should be the case that, while subject control always involves a bare **VP** infinitive complement and vertical binding, SAM in a subject-control infinitive complement should NOT always be nominative: If the matrix clause is itself made the infinitive clause complement of a higher object-control verb, SAM should be dative rather than nominative because the matrix clause is itself now an infinitive clause, which has a dative subject. In other words, the bare-**VP** hypothesis predicts that the case of SAM in a subject-control infinitive complement should depend on whether its matrix clause is finite or nonfinite (nominative in the former case, dative in the latter). This is precisely what we find.

Let us look at a concrete example. (14) is a finite clause with a subject-control infinitive complement: *odna* 'alone' is nominative because the matrix clause containing the bare infinitive **VP** is finite and therefore has a nominative subject, which *odna* agrees with.

- (14) **Ona** [_{VP}poobe ščala [_{VP}bol'se ne ezdit' tuda **odna**]].
 she:nom promised more not to-go there alone:nom
 'She promised not to go there alone anymore'

If we embed (14) under the object-control verb *zastavit'* 'to make, force,' *odna* must now be dative *odnoj* since the finite clause in (14) is now an infinitive clause and, therefore, its subject, which *odna* still agrees with, is dative; see (15) and its structure in (16). Note that the matrix direct object *ee*, which is the antecedent of PRO, is accusative, not dative.

- (15) Muž zastavil ee poobeščat' bol'se ne ezdit' tuda odnoj.
 husband made her to-promise more not to-go there alone
 'Her husband made her promise not to go there alone any-
 more'

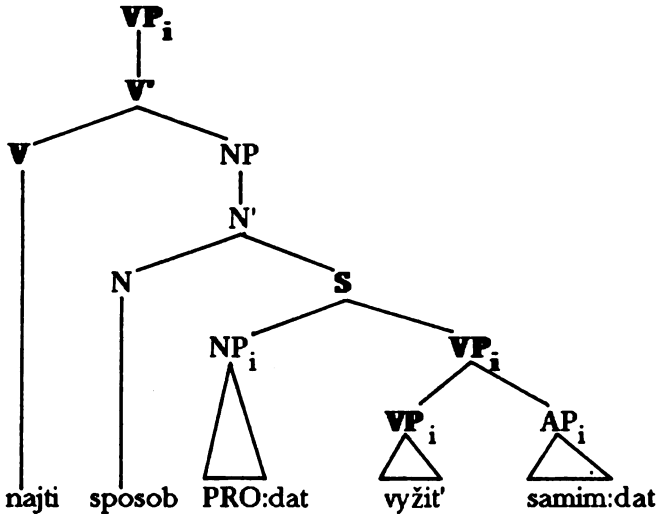


Thus, as noted earlier in §1, the nominative vs. dative case of SAM cannot be predicted solely in terms of subject control and object control. Note too that the behavior of *odin* in (14) and (15) could not be accounted for if subject-control infinitive complements were infinitive clauses: the case of the putative PRO subject of *ezdit'* would not be affected by the finiteness of the matrix verb *poobeščat'* (cf. (4a) vs. (4b)).

5.1 Infinitive Complements of Nouns

It was noted above that the vertical binding of **VP**'s external theta role is blocked if a maximal projection **XP** intervenes between the binder VP_i and bindee VP_i . If vertical binding is blocked, then the bare infinitive **VP**'s external theta role *i* is satisfied by assigning it to a dative subject NP, forming an infinitive clause. This correctly predicts that SAM in the infinitive complement of a noun must be dative. Consider (2), repeated here as (18): The nominative SAM in (18a) is dative in (18b) despite the fact that the understood subject of the infinitive is still the matrix subject *my* 'we.' The explanation for this is straightforward: The infinitive in (18b), but not (18a), is the complement of *sposob*, a noun, and must therefore be an infinitive clause, with whose dative subject SAM agrees in case. (17) is the structure of the matrix subject-control infinitive in (18b): the NP headed by *sposob* is a barrier to the vertical binding of the external theta role of the lower infinitive *vyžit'* by the external theta role of the higher infinitive *najti* (which is itself the bare **VP** complement of the modal adjective *dalžen* 'must').

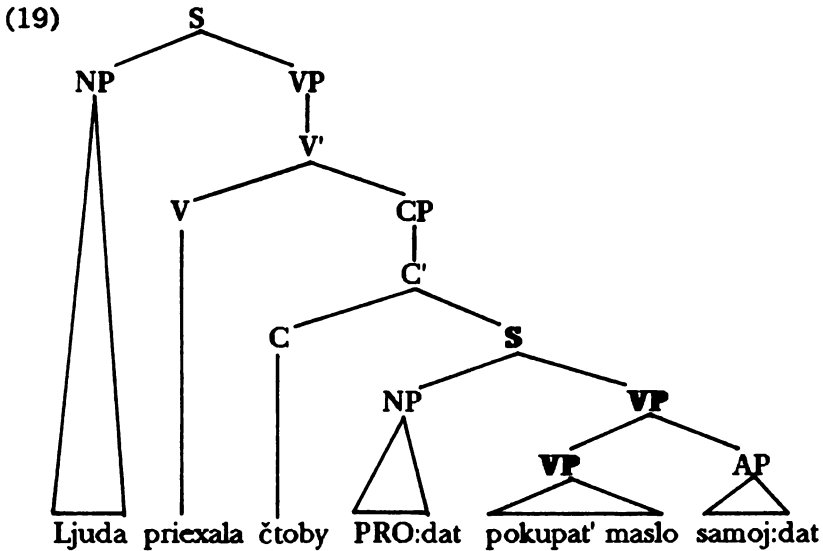
(17)



- (18) a. My [_{VP_i} dolžny [_{VP_i} vyžit' sami]].
 we:nom must survive ourselves:nom
 'We must survive ourselves'
- b. My dolžny najti sposob [_S vyžit' samim].
 we must find way:acc to-survive ourselves:dat
 'We must find a way to survive ourselves'

5.2 Infinitive Complements with Complementizers

If an infinitive is the complement of a complementizer C, then our analysis correctly predicts that SAM here must be dative: CP, the maximal projection of C, like the NP node in (17), is a barrier to vertical binding by the external theta role of the matrix VP and the infinitive complement must therefore be an infinitive clause with a dative subject (see (13)). Consider the sentences in (20) and (21) (see Comrie 1974:128); (19) is the structure of (21).



- (20) Ljuda [_{VP_i} priexala [_{VP_i} pokupat' maslo sama]].
 'Ljuda:nom came to-buy the-butter herself:nom'

(21) Ljuda priexala [_{CP} čtoby pokupat' maslo **samoj**].

'Ljuda:nom came in-order to-buy the-butter herself:dat'

There is no complementizer in (20) to block vertical binding: the infinitive complement is thus a bare infinitive **VP** and SAM embedded in it is nominative because it agrees in case with the nominative subject of the finite matrix clause. Our analysis correctly predicts that SAM must be dative if the infinitive containing it has a complementizer: In (21), CP intervenes between the finite matrix VP_1 and the infinitive VP_2 , excluding the possibility of vertical binding of the latter by the former. When the vertical binding is blocked, the only alternative is to assign VP_2 's external theta role to the dative subject NP of an infinitive clause, which *samoj* agrees with. (22) is an additional example.

(22) Oni tol'ko i ždut, čtoby samim/*sami vyskazat'sja.

'All they want to do is to speak themselves:dat'

5.3 Conjoined Infinitive Complements

Let us consider the conjunction of two infinitive complements. While we might expect a priori two conjoined infinitive complements to behave like a single infinitive complement in the same position, examples like the following demonstrate that this is not what we find: The matrix verb *želaet* 'wants' in (23) is a subject-control verb and its complement is therefore a bare infinitive **VP**, which accounts for the nominative case of SAM: it agrees with the matrix subject *on*. In (24), however, the complement of *želaet* consists of two infinitives conjoined by *i* 'and', but SAM, which is in the second conjunct, is dative (not all Russian speakers find the dative natural in (24)).

(23) On želaet [_{VP} ženit'sja na nej **sam**/*samomu].

'He:nom wants to-marry her himself:nom/*dat'

(24) On želaet razvesti Elenu s Ivanom i ženit'sja na nej **samomu**.

'He wants to break up Elena and Ivan and to marry her himself:dat'

The dative of SAM in (24) is what we expect to find, given our analysis of control, if conjunction is not a symmetrical structure (i.e. [$\text{VP}_i \text{VP}$] $_{\text{VP}}$), but is rather the ConjP projection of Conj (= *i* 'and'), in which case the first VP conjunct is the Spec of ConjP and the second VP conjunct is the complement of Conj, the head (see Babyonyshev 1997 for details of this proposal for Russian; Munn 1993). The ConjP has the same effect as NP and CP above: an XP intervenes between the potential bindee VP_i and binder VP_j , forming a barrier to vertical binding. The only other way to satisfy the infinitive's external theta role is to assign it to the subject of an infinitive clause. SAM is therefore dative in (24) because it agrees in case with the infinitive clause's null dative subject.

6.0 The Control of Verbal Adverbs in Russian

In this section I argue that the bare VP, vertical binding analysis of subject control proposed above for infinitive complements also accounts for the morphosyntactic properties of the verbal adverb in Russian, which is a fully productive nonfinite verbal adjunct whose function is parallel to that of manner adverbs and finite adverbial clauses. This section, which serves as independent evidence for the theory of subject control presented above, is particularly important because it demonstrates that the bare VP analysis of subject control is not category-specific, i.e., it holds for nonfinite adjuncts as well as infinitival arguments of the matrix verb (cf. Laurecot 1997:200).

Verbal adverbs have the following significant properties:

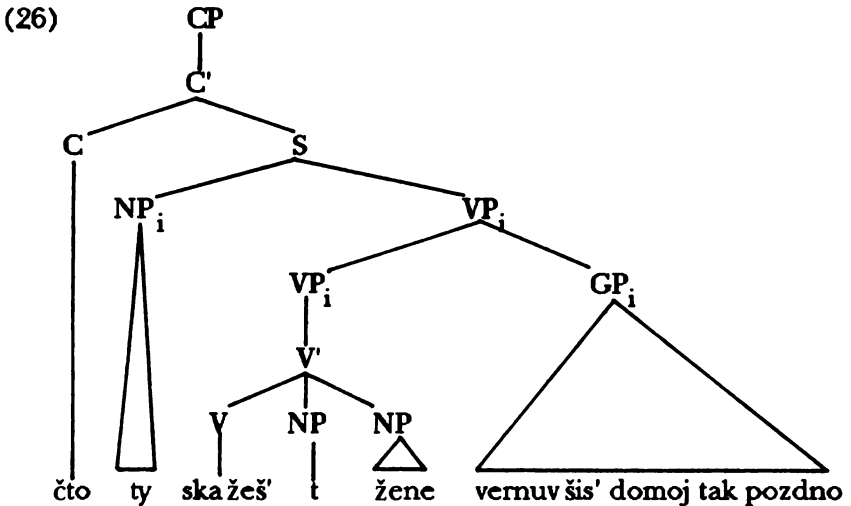
- They are uninflected, i.e., like infinitives, they do not agree in number, gender, person, or case with their "understood subject."
- Although they obligatorily have an understood subject, verbal adverbs, unlike infinitives, can never have an overt subject.
- The understood subject of a verbal adverb in standard Russian is always construed as the subject of the clause containing it. In other words, verbal adverbs are obligatorily subject-controlled. Thus the sentence in (25) is not ambiguous: The verbal adverb *vernúšis* 'having-returned' is understood as referring to the subject *ty* 'you' only; it cannot be construed as referring to the more

proximate matrix object *žene*. So the crucial question is: What excludes the possibility of object control in (25)?

- (25) Čto ty skažeš' žene, vernuvšis' domoj tak pozdno?
'What will you say to your wife, when you (*she) return home so late'

• Both verbal adverbs and reflexive pronouns in Russian are "subject oriented," i.e., both categories normally have the subject as their antecedent. Verbal adverbs therefore appear to behave like "verbal anaphors" (see Babby 1979, Babby and Franks 1997, Koster 1987:141).

These are just the properties we would expect a nonfinite verbal category to have if it were always subjectless, i.e., a bare nonfinite VP_i ; its external theta role i must be vertically bound by the external theta role i of the matrix VP. (26) is the structure of (25) (in order to avoid confusion, the verbal adverb is represented as G and its maximal projection as GP).



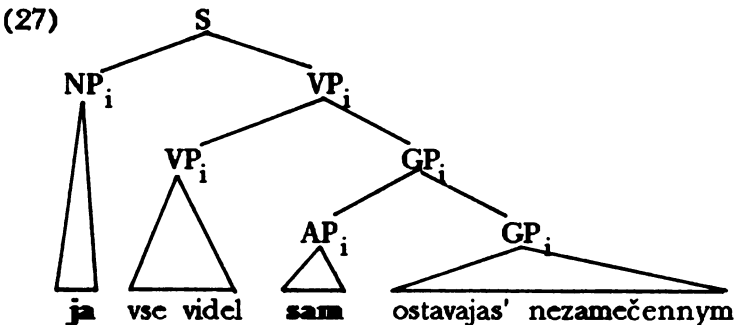
The external theta role i of GP_i is vertically bound by the external theta role i of the finite matrix VP_i , which is assigned to the matrix subject by main clause predication. This accounts for the fact

that the understood subject of GP must be the matrix subject *ty* (cf. (3)). The matrix object *žene* is never high enough to vertically bind GP. Speaking in general terms, no object is able to vertically bind a nonfinite bare VP contained in the same VP projection, which explains why object-control verbs must have infinitive clause complements rather than bare VP infinitive complements. In other words, a bare VP will always have its matrix VP's subject as its understood subject. Note that if verbal adverbs were analyzed as clauses with obligatory PRO subjects (see Koster 1987: 112), there would be no way to account for the absence of object control in sentences like (25).

Summary: Subject control is an inherent property of the verbal adverb, not a selectional property of the matrix verb, as it is in the case in infinitive complements. Since verbal adverbs are never clausal, they never have an overt subject; the only option for satisfying their external theta role is vertical binding, which explains their "subject orientation" and, therefore, their anaphor-like behavior.

6.1 The Case of SAM in GP

The structure in (26) correctly predicts that SAM in GP should be nominative when the matrix clause is finite: The nominative subject of the finite matrix clause and SAM in GP are in the same clause, and, therefore, SAM, as we saw above in (5), agrees with the subject of its clause in case. The structure of (28) is represented in (27).



- (28) Ja vse videl, **sam** ostavajas' nezamečeny.
 I:nom everything saw self:nom remaining unnoticed
 'I saw everything, (while) remaining unnoticed myself'

6.2 GP in Nonfinite Clauses

The bare GP analysis of verbal adverbs outlined above makes the following crucial prediction: If the finite clause containing a GP is itself embedded as the infinitive clause complement of a noun (cf. §5.1), then SAM in the GP should be dative rather than nominative because the subject of the clause containing the GP is now dative (cf. (14)-(16) in §5). (The clausal analysis of verbal adverbs does not make this prediction.) For example, see (29), the internal structure of the finite VP in (30), where the finite clause in (27) is embedded as the infinitive complement of the matrix-clause direct object *vozmožnost'* 'opportunity.' Notice that nominative *sam* in (27)/(28) is dative *samomu* in (29)/(30).

- (29)
-
- dala mne vozmožnost' PRO vse videt' **samomu** ostavajas' nezamečenny
- (30) Ščel' v doskax dala mne [vozmožnost' [vse videt',
 crack in boards gave me opportunity all to-see

[*samomu* ostavajas' nezamečennym]_{GPi}]_{VPi}]_{NP}
 myself:dat remaining unnoticed
 'The crack in the boards let me see everything without being
 noticed myself'

As we saw above in §5.1, infinitive complements of nouns must be clausal since the NP projection of N blocks vertical binding. Since, according to our hypothesis, verbal adverbs are bare GPs, SAM in GP is in the same clause as the dative PRO subject of the infinitive clause and, therefore, *samomu* in (29)/(30) agrees with PRO in dative case as well as gender and number. PRO's antecedent is the matrix object *mne*, which precedes and c-commands it. There is therefore no direct relation between *samomu* and *mne* in (29), i.e., *samomu* agrees in case directly with PRO, not with *mne* (cf. (1c)/(7)).

7 SAM in Colloquial Russian

In colloquial spoken Russian, the dative of SAM in object-control sentences like (1c), repeated here as (31), can be replaced by the accusative, as in (32).

(31) Ona poprosila ego ne ezdit' tuda **odnomu**
 'She:nom asked him:acc not to-go there alone:dat'

(32) Ona poprosila ego ne ezdit' tuda **odnogo**.
 'She:nom asked him:acc not to-go there alone:acc'

If we were to assume here, as we have throughout this paper, that object-control infinitive complements are clauses, we would have to claim that PRO in (32) agrees in case with the accusative matrix object *ego* and that *odnogo* agrees in case with the accusative PRO (see Neidle 1988, Babby 1991 for proposals involving case agreement of PRO with a matrix-clause NP). But this type of explanation runs into problems; e.g., it violates basic principles of case theory since the dative case assigned to PRO is lexical (quirky) case, whose overt realization cannot be superseded by case agreement (Babby 1994; see Laurençot 1997 for a different view).

There is, however, a far more plausible explanation available for the diachronic change we see at work in the relation between

(31) and (32): Under the influence of sentences like (30), in which the dative of SAM appears to agree directly with a dative matrix object, object-control infinitive complements in colloquial Russian are being reanalysed as bare infinitive **VPs**, which form a small clause with the matrix direct object. The case of SAM is now entirely straightforward: SAM agrees in case with the subject of its clause, only here the clause is a small clause and its subject is an accusative direct object NP. Notice that under this analysis, the matrix object is assigned two theta roles, an internal theta role of the matrix verb, and the external theta role of the bare **VP** infinitive complement it forms a small clause with. But there are no theta role assignment violations involved since each theta role is assigned to the direct object in a different "argument complex" (see Williams 1994).

Thus (31) and (32) have the structures in (33) and (34) respectively (I am assuming that "small clauses" involve predication in the sense of Williams 1980, 1994). In (33), **VP**_i is predicated of PRO, forming an infinitive clause; in (34) it is predicated of the direct object ego, forming a "small clause."

(33) Ona poprosila ego [PRO_i [**VP**_i-ne ezdit' tuda odnomu]]_S
 acc dat dat

(34) Ona [_{VP} poprosila ego_i [**VP**_i-ne ezdit' tuda odnogo]]
 acc acc

8 The Status of PRO

Given that subject-control infinitive complements do not have a subject and that the null subject of object-control infinitive clauses is assigned lexical case, occurs in a position that licenses overt case-marked lexical nouns (see (8)-(13)), and is invariably controlled by the matrix object, the question arises whether the null subject in Russian infinitive clauses has the properties originally attributed to PRO (see Chomsky 1981, 1986) and, therefore, whether a null category with the properties of PRO is in fact needed. It seems natural in the light of the analysis of Russian proposed above to explore the possibility that the null subject in finitive clauses is either t (trace) or small pro (see Koster

1986:110). Small *pro* seems to be a promising candidate since it is case marked, and, in most of the sentences we saw above, the null subject of the infinitive clause can be replaced with an overt lexical noun, which is parallel to the way *pro* behaves in finite clauses.

If, however, we wish to claim that the null subject of infinitive clauses is *pro* rather than PRO, we have to account for the fact that the null subject of an object-control infinitive complement clause normally **cannot** be replaced by an overt subject, as it can in infinitive clauses with other functions (see (8)-(11)). The following solution is speculative and is offered only as a possible direction for future research.

The suppression of overt lexical subjects in object-control infinitive clauses is not an isolated, construction-specific phenomenon. The same thing happens in derived nominals: An obligatory argument of a derived nominal cannot normally have an overt realization if it is coreferential with an argument of the verb that assigns the derived nominal its theta role (see Babby 1997b: §§2.1, 2.4 for details). I am therefore proposing that the null subject of an infinitive clause in Russian is *pro* and that the canonical suppression of an object-control infinitive's subject is an instantiation of a more general phenomenon sometimes referred to as "parallelism constraints" by N. Chomsky (personal communication); cf. the "controlled *pro*" phenomena discussed in Suñer 1984. However, a great deal more must be learned about parallelism constraints before we can demonstrate satisfactorily that this is what is involved in object-control infinitive complements.

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Bulgarian Liquid Metathesis and Syllabification in Optimality Theory

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1 Introduction

Directional syllabification has been used in derivational models of phonology to account for a variety of prosodic and segmental phenomena. Among these are glide formation in -VV- sequences (i.e. in Lenakel, Lynch 1974, cited in Blevins 1995), onset maximization (-V.CCV- vs. VC.CV-, Itô 1989), and placement of epenthetic vowels in -CCC- and -CCCC- clusters (Itô 1989, Archangeli 1991). The last of these phenomena, exemplified most famously by the differences (and similarities) in epenthesis in Cairene and Iraqi Arabic (described and analyzed in, among other places, Broselow 1980 and Itô 1989) is the cornerstone of the directional theory of syllabification. Recent non-derivational approaches to the directional syllabification data include Syllable Alignment (Mester and Padgett 1994, Davis and Zawaydeh 1996), Positional Faithfulness (Casali 1996), and Relativized Contiguity (Lamontagne 1996). Three of these four accounts deal solely or at length with the Arabic phenomena. The relevant facts are reviewed for the reader in (1) and (2):

(1) Epenthesis into Arabic -CCC- sequences:

Cairene: -CCC- > -CCiC- (/ʔul-t-l-u/ > ʔul.ti.lu 'I said to him') -
L to R.

Iraqi: -CCC- > -CiCC- (/gil-t-l-a/ > gi.lit.la 'I said to him') -
R to L.

(2) Epenthesis into Arabic -CCCC- sequences:

Cairene and Iraqi: -CCCC- > -CCiCC-

Cairene: /ʔul-t-l-ha/ > ʔultulha 'I said to her'

Iraqi: /gil-t-l-ha/ > gilitilha 'I said to her'

(1) shows that Cairene Arabic epenthesizes into tri-consonantal sequences between the second and third consonants, while Iraqi epenthesizes between the first and second. According to Itô 1989, this is explicable if syllabification takes place from left to right in Cairene and from right to left in Iraqi. Thus, equipped with the appropriately-specified syllable template, the syllabification algorithm for Cairene starts from the left in /ʔul-t-l-u/, syllabifying first [ʔul]_σ. Upon encountering, however, the unsyllabifiable (due to onset constraints) [-tl-], the algorithm is forced to epenthesize a vowel to achieve an acceptable syllable, giving us [ʔul]_σ [ti]_σ, and ultimately [ʔul]_σ [ti]_σ [lu]_σ. Essentially the reverse occurs in Iraqi, which gives us the discrepancy in placement of the epenthetic vowel. (2) simply shows that in sequences of four consonants the epenthetic vowel will surface in the same position regardless of the direction of syllabification.

Instances of epenthesis reminiscent of those in Arabic can be seen in, among other languages, Bulgarian. This has led some scholars to analyze the Bulgarian facts as an instance of directional syllabification. Petrova 1994 presents such an analysis based on the framework proposed in Itô 1989 and elaborated in Archangeli 1991. I will show in this paper that such directional approaches fail to account for the Bulgarian data. In addition, I will show that the optimality-theoretic approaches to directional syllabification cited above fare no better with respect to Bulgarian. It will be seen that the Bulgarian epenthesis facts represent a system of epenthesis typologically-distinct from that of the Arabic dialects, and require a separate analysis. I will provide such an analysis in Optimality Theory without the additional constraints and mechanisms that seem to be necessary for the Arabic cases, using constraints familiar from earlier work in the theory.

2 Schwa Epenthesis or ‘Liquid Metathesis’ in Bulgarian¹

The facts of the Bulgarian case are as follows. It should be noted that I use the term “schwa epenthesis” in keeping with the literature on the subject, and for the sake of graphic convenience. The vowel in question is not a schwa at all, but rather a high, central, unround vowel (phonetically rather farther back and lower than the canonical barred-i, however). The vowel system of Bulgarian is displayed in (3):

(3) The Bulgarian Vowel System

i	â	u
e	o	
	a	

In unstressed syllables, there is neutralization of /â/ and /a/ to a true schwa. The syllable template of Bulgarian (as given in Petrova 1994) is as shown in (4):

(4) $[C_0^2 V C_0^2]_{\sigma}$

Which is to say, a syllable consists of a nuclear vowel with from zero to two onset and coda consonants.

The phenomenon that concerns us here involves a large number of Bulgarian roots which undergo an alternation between sequences ‘liquid + schwa’ and ‘schwa + liquid’. The selection of /Lâ/ or /âL/ is determined by syllabification, such that before a tautosyllabic consonant, the sequence surfaces as -Lâ-, and before a heterosyllabic consonant, as -âL-. This is illustrated schematically in (5), with examples given in (6):

(5)

$\begin{array}{c} \sigma \\ / / \backslash \\ \text{CL} \text{ C} \\ \hat{a} \end{array}$	$\begin{array}{c} \sigma \quad \sigma \\ / \backslash \quad / \backslash \\ \text{C L} \text{ C} \\ \hat{a} \end{array}$
---	--

¹Described in, among other places, Scatton (1975), Tilkov (1982), Zec (1988), and Petrova (1994).

- | | | | |
|----------------|----------------|------------|-------------------------|
| (6) a. grâk | ‘Greek man’ | gâr.ki.n’a | ‘Greek woman’ |
| b. srâp.ki.n’a | ‘Serb woman’ | sâr.bin | ‘Serb man’ |
| c. prâf | ‘first’ (adj.) | pâr.vi.jât | ‘the first’ (def. adj.) |
| d. skrâp | ‘grief’ | skâr.b’a | ‘I grieve’ ² |
| e. krâf | ‘blood’ | kâr.vaf | ‘bloody’ (adj.) |
| f. vrâb.ni.tsa | ‘Palm Sunday’ | vâr.ba | ‘willow’ |

While the number of forms participating in the alternation is great, there are also a large number of forms containing schwa + liquid or liquid +schwa clusters which do not show any alternation. Some examples can be seen in (7):

- (7) a. blâf ‘bluff’ (as in cards)
 b. krâk ‘circle’
 c. sârġ ‘surfing’
 d. xâlm ‘hill’
 e. četvârt ‘quarter’

Generative accounts of this phenomenon, beginning with Scatton 1975, have assumed that alternating roots have an underlying form /CLC/ with no vowel specified at all, while roots with no alternation simply have the place of the vowel pre-specified in UR as either /CâLC/ or /CLâC/. Bulgarian, unlike other Slavic languages, does not tolerate sonority-sequencing violations of sonorants and obstruents, and has no syllabic sonorants. In roots of the form /CLC/, then, the vowel is inserted during the derivation by epenthesis, with the site determined by syllable structure. /CâLC/ and /CLâC/ are left unchanged. Thus, the “Liquid Metathesis” is not a metathesis at all, but rather epenthesis. I will be assuming the same underlying representations here.

3 Directional Accounts of Bg. Schwa Epenthesis

3.1 A Derivational Approach

²Bulgarian, which lacks an infinitive, uses the 1sg present tense of the verb as a citation form.

The best of the derivational accounts of Bulgarian schwa epenthesis is that of Petrova 1994, based on the directional approaches of Itô 1989 and Archangeli 1991. To solve the problem, Petrova sets the following conditions for Bulgarian syllabification:

(8) Parametric Settings for Bulgarian Syllabification.

- a. template: $[\mu]_{\sigma}$
- b. Conditions: (i) $\sigma[C_0^2V]$
(ii) $C_0^2]_{\sigma}$
- c. Project syllables from vowels and consonants
- d. Project syllables from right to left (Petrova 1994, p. 334)

Thus, the Bulgarian syllable template consists of a single (vocalic) mora. To this nuclear mora can be linked from zero to two onset or coda consonants. Both vowels and consonants 'project' syllables, and syllabification occurs from left to right. Petrova thus derives Bg. [vâr.xo.ve] < /vr̥x-ove/ 'peaks' as shown in (9):

(9) Derivation of [vâr.xo.ve] < /vr̥x - ove/ 'peaks'

- a. v r x o v e >
- σ
 \
- b. v r x o v e >
- σ
 ^
- c. v r x o v e >
- σ σ
 ^ ^
- d. v r x o v e > vâr x o v e
- σ σ σ σ σ σ
 \
 ^ ^ // ^ ^

A syllable is projected from the final vowel /e/ in (9a), and then gains an onset consonant in (9b). In (9c), the same occurs with [xo]. Finally, in (9d), a syllable is projected from the liquid.

Finding no vowel to provide a nucleus for the syllable, however, the algorithm inserts a schwa and finishes syllabifying, giving us [vâr.xo.ve].

This approach encounters a problem, however, when faced with underlying forms such as /grb/:

(10) Derivation of [grâp] < /grb/ ‘back’

$$\begin{array}{ccc} \sigma & & \sigma & & \sigma \\ \backslash & & // \backslash & & // \backslash \\ g \ r \ p & > & grâp (?) & \text{or} & gârp (?) \end{array}$$

A syllable is projected from the /p/, but there the difficulty begins. It is not clear whether the algorithm should first syllabify the liquid as part of a complex coda and then epenthesize, or epenthesize first, and then syllabify the liquid as part of a complex onset. Petrova derives the correct [grâp] by means of the following condition on the algorithm:

Whenever an obligatory templatic element is missing, e.g. the nuclear vowel for Bulgarian, the mapping may only proceed after satisfying the templatic requirements. That is, syllabification can only be effected iff epenthesis inserts material to satisfy the requirement for an obligatory vocalic nucleus (Petrova 1994: 336).

This means that the algorithm, having projected a syllable from the final consonant, sees that it has insufficient material for successful syllabification of the sequence, and must epenthesize immediately, before linking further segments to the projected syllable node. This, however, is extremely problematic for the theory. A sequence ‘L + Obstr.’ is a well-formed coda in Bulgarian, as in ‘dâr’ (‘elderly’, pej.), or ‘sârp’ (‘sickle’). The algorithm could just as well syllabify the liquid as a coda, and only then, having actually run out of syllabifiable material, epenthesize the schwa. The only basis for choosing the site of epenthesis in (10), then, is the stipulation that, upon encountering an *ultimately* unsyllabifiable sequence, epenthesis must occur immediately after the segment projecting the syllable. In stipulating this, however, the account ceases to be truly directional, since the place of epenthesis no longer falls out naturally

from direction alone. This problem does not arise in the directional accounts of Iraqi Arabic (Itô 1989) or in Yawelmani (Archangeli 1991). In these both, complex codas are disallowed, making the immediate epenthesis necessary. In Bulgarian, however, complex onsets and codas as such are not prohibited; they are merely dispreferred. Without this fairly arbitrary restriction on the workings of the syllabification algorithm, then, Petrova's directional approach cannot account for the facts of Bulgarian.

3.2 *Some Potential OT-Approaches*

As noted above, various mechanisms have been proposed within Optimality Theory that can account for the facts previously attributed to directional syllabification. While these are able to handle the Arabic data successfully, they are not sufficient to account for the Bulgarian facts described here. The approaches I will consider are Syllable Alignment (Mester and Padgett 1994) and Relativized Contiguity (Lamontagne 1996).

Syllable Alignment uses the following constraints to account for the placement of the epenthetic vowels in Arabic:

- (11) Left-to-Right Syllabification = Align Right(σ , PrWd)
 Right-to-Left Syllabification = Align Left(σ , PrWd)

These constraints state that a given edge of every syllable in an output candidate must be aligned with the same edge of a prosodic word. For Arabic, violations are reckoned according to the number of moras intervening between the relevant edge of a syllable and the corresponding edge of the prosodic word. For the Iraqi Arabic form in (1), then, the Align-Syllable-Left constraint works as follows:

- (12) a. gi lit la - 3 violations
 * **
 b. *gil ti la - 5 violations
 ** ***

The grammar chooses (12a) as the optimal candidate, since it incurs two fewer violations of Align-Syllable-Left.

Since Bulgarian has only mono-moraic syllables, the number of violations in a given candidate will be the same regardless of the

placement of the epenthetic vowel. Another implementation of Syllable Alignment as per Mester and Padgett (1994) is to tally violations according to the number of segments intervening between the relevant edges. This variant, however, fares no better:

(13) Violations of Align-Syllable-Left reckoned by segments for potential outputs of schwa epenthesis:

a. *vârx - 0 violations

b. vrâx - 0 violations

c. vâr xo ve - 8 violations
 *** *****

d. *vrâ xo ve - 8 violations
 *** *****

e. srâp ki n'a - 10 violations
 **** *****

f. *sârp ki n'a - 10 violations
 **** *****

The forms in (13a) and (b) obviously both satisfy the constraint. As monosyllables, the only left syllable edge in both naturally coincides with the left edge of the prosodic word. Syllable alignment thus makes no prediction as to the placement of the epenthetic vowel. More troubling, however, are the remaining candidate sets. The forms in (13c) and (d) also incur an equal number of violations of the Align constraint, as do the forms in (13e) and (f). Nowhere is a winning candidate chosen for epenthetic vowel placement. This brings us to an important difference between Arabic and Bulgarian epenthesis. In Arabic, the location of syllable margins is determined by the placement of the epenthetic vowel. In Bulgarian, the syllable margins are the same regardless of the site of epenthesis. This difference causes significant problems for both directional accounts reviewed so far, and for Syllable Alignment, it renders the operative constraint completely ineffective.

An alternative approach to the directional syllabification data is Relativized Contiguity (Lamontagne 1996). Lamontagne uses the

following constraints to select the winning candidates in Arabic (and other languages):

(14) Left-to-Right Syllabification = Domain Contiguity: 'Contiguity between correspondents within a domain D' (here, the syllable).

If two segments are adjacent within output syllables, their correspondents must be adjacent in the input and vice versa. Domain contiguity is violated by epenthesis or deletion between the margins of a syllable.

(15) Right-to-Left Syllabification = Juncture Contiguity: 'Contiguity between correspondents across identical domains D' (again, here, syllables).

If two segments are adjacent across output syllable boundaries, their correspondents must be adjacent in the input and vice versa. Juncture contiguity is violated by epenthesis or deletion on syllable margins.

(16) Iraqi: σ σ σ
 V CiC CV D-Contig violated. J-Contig satisfied.

(17) Cairene: σ σ σ
 VC Ci CV J-Contig violated. D-Contig satisfied.

Lamontagne, in presenting his solution to the Arabic problem, notes that his solution applies equally well to the many other languages showing either the Cairene or the Iraqi pattern of epenthesis, and as it has other applications as well, is to be seen as a "truly general theory of string modification". Among the languages listed by Lamontagne as following the Iraqi pattern is Bulgarian. The relevant constraint is thus Juncture Contiguity. This approach too, however, will be seen to be unsatisfactory. Firstly, as shown in (18a,b), J-Contig makes no predictions for epenthesis in monosyllables. Since there is no juncture at all both candidates, the constraint is satisfied vacuously:

(18) Comparison of potential schwa epenthesis outputs w.r.t. Juncture Contiguity.

a. vrâx - No juncture. No violation of J-Contig.

b. *vâr x - No juncture. No violation of J-Contig

(18c) and (18d) also tie with respect to J-Contig, since the segments at the syllable boundaries are the same regardless of the placement of the epenthetic vowel. Again, no prediction is made.

c. srâp ki n'a - No violations.

d. *sârp ki n'a - No violations.

In (18e,f), however, the correct candidate is indeed selected by J-Contig, since the epenthetic vowel in (f) creates bad juncture contiguity for /r/ and /x/:

e. vâr xo ve - No violations.

f. *vrâ xo ve - One violation.

Thus, in one type of context at least, J-contig is successful. We could imagine, in addition, some combination of Relativized Contiguity and other constraints (e.g. *Complex Coda) which would ultimately select the correct candidate for each example of schwa epenthesis.

Relativized Contiguity is thus attractive at least as part of a solution to this problem insofar as it works for Arabic as well, and for a variety of other string-modification phenomena (i.e. glide formation in -VV- sequences). The account I will propose here for Bulgarian does not help with the Arabic data. Relativized Contiguity is thus applicable more generally. I would claim, however, that the J-Contig solution to Bulgarian is nonetheless to be dispreferred. The constraint is satisfied vacuously in monosyllables, and it makes no prediction for candidate sets like [srâp.ki.n'a] vs. *[sârp.ki.n'a]. What is more, I will show below that the *Complex constraints needed for the J-Contig account to succeed actually suffice by themselves to solve the schwa-epenthesis problem. Thus, J-Contig in the final analysis does very little work in the system, and introduces unnecessary complications into the grammar. Though J-Contig is successful in the treatment of Iraqi Arabic, Bulgarian and Arabic actually represent typologically-distinct systems of

epenthesis, and might well require different types of analyses. Even if they do not, we can at the very least say that an analysis capable of treating both systems adequately has yet to be discovered.

4 An OT Solution to the Schwa-Epenthesis Problem

We have seen that Petrova's derivational account of Schwa Epenthesis, in addition to the use of Directionality and principles governing the function of templates in the grammar (Template Satisfaction and Maximization), must have recourse among other things to the information in (19a,b):

(19) a. sonority-sequencing constraints and constraints governing possible mora-bearing units (not explicitly stated but unavoidable nonetheless).

b. Information concerning possible onsets and codas.

An OT-account based on relativized contiguity will require the same additional information, as shown above. I will show here that it is possible to construct an optimality-theoretic account of schwa-epenthesis, in which the constraints on onsets and codas are ranked and violable, using only the information in (19a) and (b) above. No form of Directionality or Relativized Contiguity is necessary. The constraints needed to achieve this are shown in (20):

(20) Constraints: assumed but not displayed - undominated MAX (no deletion), undominated constraints enforcing correct sonority sequencing, Onset (syllables must have onsets).

a. $*\mu$ - consonants do not bear moras

|
C

b. DEP - no epenthesis

c. *Complex Coda

d. *Complex Onset

The constraint against moraic consonants could take a variety of forms, depending on one's ideas concerning constraints governing syllabification in OT. The exact formulation of the constraint is unimportant here. Since Bulgarian has no long vowels (either a separate constraint or part of a complex of constraints on moraicity in the language, of which the constraint in question here would be a part), this constraint suffices to rule out both bi-moraic syllables and syllabic consonants. The other constraints are familiar enough from previous work by various authors in OT.

Tableau (21a) shows the interaction of the above constraints in selecting the optimal candidate [grâk]. The first candidate, with no epenthesis at all, violates the constraint against moraic consonants, and is excluded immediately. The remaining two candidates both have epenthesis, and thus tie with respect to DEP. The second candidate, however, has a violation of *Complex Coda. Since this constraint is higher-ranked than *Complex Onset, the second candidate is excluded, regardless of its violation of the lower-ranked *Complex Onset. The correct form is thus selected. Note that this means that, at least for Bulgarian, the constraints on complex syllable margins must remain separate, and cannot be collapsed into some sort of *Complex or any variant thereof.

(21) Tableaux:

a. [grâk] 'Greek man'

/grk/	* μ - C	DEP	*CmpCd	*CmpOn
grk	*!			
gârk		*	*!	
grâk		*		*

Tableau (21b) shows the selection of the optimal [gâr.kât] < /grk-ât/. Again, the form with no epenthesis is excluded immediately, and the remaining two candidates tie with respect to DEP. Here, however, there is no complex coda in either candidate, but the second

candidate includes a gratuitous violation of *Complex Onset, which causes the third, correct form to be selected.

b. [gâr.kât] ‘the Greek man’

/grkât/	* μ - C	DEP	*CmpCd	*CmpOn
gr.kât	*!			
grâ.kât		*		*!
☞ gâr.kât		*		

Tableaux (21c,d) show essentially the same facts as (21a,b), but with a different root. (21e) shows the effect of the constraints on a non-alternating root. Here the winning candidate has a violation of *Complex Coda, but is selected nonetheless, since epenthesis (or deletion) would violate the higher-ranked DEP (or Max) constraints. No repair is made to the underlying form³.

c. [dâr.žâ] ‘I am holding (something)’ (1sg. pres.)

/držâ/	* μ - C	DEP	*CmpCd	*CmpOn
dr.žâ	*!			
drâ.žâ		*		*!
☞ dâr.žâ		*		

³A third possibility, [drât], with metathesis applied to the underlying vowel and sonorant, could be ruled out by a high ranking for a constraint on linear ordering of segment (e.g. Contiguity). In words where epenthesis applies, this constraint would not be violated, since the schwa-vowel is not present in UR.

d. [drăș] ‘Hold (this)!’ (imp.)

/drž/	* μ - C	DEP	*CmpCd	*CmpOn
drš	*!			
dârš		*	*!	
☞ drăș		*		*

e. [dârt] < /dârt/ ‘elderly’ (pej.)

/dârt/	* μ - C	DEP	*CmpCd	*CmpOn
dârât		*!		
☞ dârt			*	

5 Conclusion

Bulgarian Schwa Epenthesis, previously analyzed by means of directional syllabification, can be solved with ranked constraints using only information present in the templatic specifications used in the directional account. Constraints developed for epenthesis phenomena in other languages introduce needless complication into the analysis. I have shown that the Bulgarian case is typologically distinct from the Arabic cases for which directional syllabification was introduced: the site of epenthesis in Bulgarian does not affect the location of syllable margins, while in the Arabic dialects it does. Therefore, I conclude that Bulgarian and any other cases like it require separate treatment in any general theory of epenthesis.

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Polabian Prosody*

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1 Background

Polabian, also known as Wendish, was a West Slavic Lekhitic language spoken along the western bank of the Elbe River near Dannenberg and Lüchow in Germany until approximately the mid-eighteenth century. Limited data, namely, some 2,800 lexical items listed in Hennig von Jessen's *Vocabularium Venedicum*, Pfeffinger's *Vocabulaire Vandale* and Parum Schultze's *Chronicle* (all published by Rost 1907 and republished by Olesch in 1959, 1962, 1967, 1983-87) and Germanisms in the transcriptions make the reconstruction of Polabian difficult. There are conflicting analyses of Polabian phonology, beginning with the historical accounts of Schleicher 1871, Hirt 1896, Lehr-Spławiński 1917, 1929, 1963, Kuryłowicz 1955, Micklesen 1986, and Kortlandt 1989 to the synchronic descriptions of Trubetzkoy 1929, Polański and Sehnert 1967, Olesch 1973, 1974, Suprun 1987, Luschützky and Reinhart 1991, and recently Polański 1993. Differences of opinion primarily concern prosody, specifically the question of whether Polabian vocalism attested in the eighteenth century was based on vowel quality or vowel quantity distinctions and whether stress was lexical (free) or predictable (fixed). There appears to have been a correlation between full vowels and stress, though it was not in a one-to-one correspondence.

In the Slavic linguistic literature analyses of the synchronic system of Polabian are basically of two types. One takes stress to be distinctive and vowel quality to be predictable from stress (Luschützky and Reinhart 1991). The other claims that vowels are distinctive, either in terms of quality (Lehr-Spławiński 1929, Polański 1993) or quantity (Trubetzkoy 1929), and that stress placement is predictable. The analysis based on postulating distinctive (lexical) stress cannot account for a significant portion of the data, while the analyses based on distinctive vowel quantity or quality do not account for the distributional restrictions on full and reduced vowels. My goals here are modest ones: (i) to reconcile the quantity versus quality issue by an autosegmental analysis, (ii) to explore the distributional restrictions of

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Polabian vocalism by showing that Polabian may be subject to certain metrical constraints, and (iii) to demonstrate that Polabian main stress is predictable from metrical footing.

The data below in (1) represent some typical patterns of Polabian vocalism. These are cited in Polański and Sehnert's 1967 standardized transcription; V indicates a full vowel or diphthong and \check{V} a reduced vowel (see also Luschützky and Reinhart 1991):

- (1) a. V *pan* 'stump'; *p'ās* 'dog'; *d'ūzd* 'nail'; *st'öt* 'cattle';
tāl 'nape, neck'
- b. VV *pasai* 'dogs'; *motai* 'mother'; *s'onü* 'hay'; *komoi*
'stone'; *grausai* 'pear trees'; *jopt'ü* 'apple'; *t'ösör*
'groats'; *müzdin* 'brain'; *l'ötü* 'year, summer';
d'ölq̄b 'pigeon'
- c. V \check{V} *smölä* 'resin'; *gjozdä* 'star'; *vädä* 'water'; *corně*
'black, masc. sg.'; *brotăc* 'brother, dim.'; *gornět* 'to
speak'; *t'ünăc* 'end'; *toblăc* 'sorcerer'; *dübrě* 'good';
celă 'bee'; *dausă* 'soul, breath'
- d. VVV *raminai* 'shoulders'; *t'ül'onai* 'knees'; *zil'ozü* 'iron';
sarsine 'hornets'; *golqzai* 'boughs, branches';
perisai 'wings'; *äipaustäl* 'he has dropped';
vämäknqt 'to lock up, in'
- e. VV \check{V} *carnaic'ă* 'blackberry'; *komině* 'stones'; *lūpotă*
'shoulder blade'; *sarüt'ě* 'wide'; *skocaikă* 'stallion',
sülenă 'salted'; *vicenă* 'sheep, adj.'; *zaim'onă*
'fever'; *pätinăc* 'bird, finch'; *văstrügă* 'spur'; *viceră*
'supper'
- f. VV \check{V} *t'ösăr'o* 'groats, gen. sg.'; *muzděne* 'brains';
jod'ăddai 'berries'; *nopăläi* 'half, halfway'; *pqtărü*
'five'; *gresnărüm* 'sinners, dat. pl.'; *komăndai* 'oven'
- g. VV \check{V} \check{V} *pajăvaic'ă* 'leech'; *lūpătaic'ă* 'wooden shovel';
naděbreisă 'best'; *zauzălaic'ă* 'worm'; *sămătonă*
'cream'; *aipădeně* 'fallen away'; *vistăraic'ă* 'lizard';
aikrădině 'stealing'; *lostăvaic'ă* 'swallow'

- h. VVVV̆ *joliuvaic'ă* 'heifer'; *lostovaic'ă* 'swallow';
zil'ozenă 'iron, adj'; *sredületnë* 'midyear';
aipaustenë 'dropping'; *t'enqd'ain'ă* 'noble-
 woman'; *aikqsenë* 'bitten'; *perdojaikă*
 'merchant'; *ăitüpâl să* 'he drowned'
- i. VV̆V̆V̆ *jadânăcti, janünăcti* 'eleven'; *divqtñădist*
 'nineteen'; *târojnăcti* 'thirteen'; *divqtârü* 'nine
 (collective)'; *să nibës'o* 'from heaven'
- j. V̆V̆V̆V̆ *püd nëbis'âm* 'under the heavens'; *sidëmdisqt*
 'seventy'; *sidëmnocti* 'seventeen'; *zobăt'ünt'ai*
 'shells, mussels'; *citërnnocti* 'fourteen';
visëmdis'qt 'eighty'
- k. VVVVV̆ *voitrqdaiv'onă* 'hollow'; *târüjjanocë* 'triune,
 nom. sg. masc. adj.'
- l. V̆V̆V̆V̆V̆ *vitëdojimë* 'we forgive'; *voikăpuñonë*
 'castrated'; *citërnidelă* 'month'
- m. VV̆V̆V̆V̆ *vrevalăjqcë* 'stubborn'; *gribinătaic'ă* 'spine';
jadânădistë 'eleven'; *klaibenătaic'ă* 'pin';
rüzvajănait'ë 'sticks used in weaving'

The vowel system of Polabian is given in (2), based on Polański 1993:799. The two vowels /q/ and /q̄/ are nasalized, and ă may be a positional variant of /o/, according to Luschützky and Reinhart 1991.

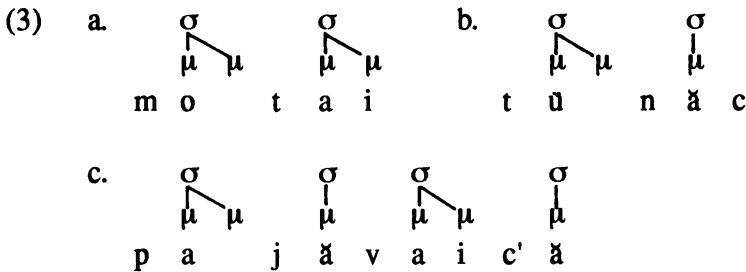
(2) *Polabian vowel system* (based on Polański 1993:799)

	Front		Back
High	<i>i</i> <i>ü</i>		<i>u</i> (in borrowings)
	<i>e</i> <i>ö</i>		<i>o</i>
Low		<i>a</i>	(ă)
		<i>q</i>	<i>q̄</i>
Reduced vowels	<i>ě</i>		<i>ǎ</i>
Diphthongs	<i>ai</i>	<i>oi/ăi</i>	<i>au</i>

Polański (1993:800) observes that “the Polabian language of the late seventeenth and early eighteenth centuries did not have quantity proper, that is, it did not distinguish between long and short vowels.” Several factors, however, suggest that quantity is not entirely irrelevant to Polabian vocalism and that it might still play a role in a synchronic description. First, there are traces of historical quantity in Polabian. These are manifested as a resistance of the nasal vowels to reduction, e.g., CS *vŭmŭknŏŭ > Pb *vāmāknŏt* ‘to lock up’ (Polański and Sehnert 1967:22) and as the retention of full vowels in positions which were originally posttonic, and in pretonic long syllables, e.g., CS *gólvy > Pb *glávoi* ‘heads’, CS *gólqbi > Pb *d’olqb* ‘pigeon’, CS *melká > Pb *mlākā* ‘milk’, gen. sg., CS *luná > Pb *laurā* ‘moon’ (Kortlandt 1989). Polabian also shows fairly regular diphthongization of the high vowels /i/, /u/ and /y/ in positions of strength and a reduced variant (or no vowel) in “weak” position: CS *biti > Pb *bait* ‘to beat’, CS *ulomiti > Pb *ailümět* ‘to break off’, CS *dymŭ > Pb *dāim* ‘smoke’. Apparently the high vowels, which are phonetically shorter than non-high vowels, were felt not to be long enough for strong position in Polabian and they lengthened into a two-positional nucleus.

2 Previous analyses

In 1929 Trubetzkoy proposed to distinguish full vowels from reduced ones by mora count. Taking full vowels and diphthongs to be bimoraic, Trubetzkoy was able to formulate the predictability of final or penultimate stress as the result of a process which gave prominence to the penultimate mora: *mootái* ‘mother’, *t’ūūnāc* ‘end’. Trubetzkoy was criticized for proposing a quantitative distinction in a system which does not have a phonemic length opposition in the vowels, in other words, there is no long /ā/ versus a short /ǎ/ or a long /ō/ versus a short /ǒ/ opposition in Polabian. But I think that Trubetzkoy was basically right and that quantity functions in Polabian prosody, although in the form of light or heavy syllables rather than as a feature or a phonemic opposition. If we postulate that full vowels and diphthongs are bimoraic and reduced vowels monomoraic, then we can distinguish between the two prosodically. The autosegmental representation of quantity as independent of segment features makes a distinction between light and heavy syllables without resorting to binary feature marking (3):



The separation of the moraic tier from the segmental melody allows us to relate quantity to both syllable structure and segments without necessarily implying a short/long opposition for each vowel, e.g., /a/, /ä/, etc. This representation of quantity also illuminates certain prosodic restrictions on Polabian vocalism and word prominence.

Polanski 1993:800 describes Polabian as follows: "The opposition between non-reduced and reduced vowels was conditioned by stress, which was on the final or on the penultimate syllable ... Vowels in stressed (=tonic) or immediately pre-tonic syllables did not undergo reduction, for example, *zobó* (< **žaba*) 'frog', *nidélä* (< **nedělja*) 'Sunday'. Such syllables are referred to as strong. Reduction regularly affected post-tonic syllables and, optionally, syllables occurring between the main and the secondary stress (the latter here marked `), compare *zíně* (< **ženetü*) 'drives', *bledáicä* (< **blédica*) 'paleness', *pätärü* (< **petero*) '5'. The secondary stress most frequently fell on the antepenultimate syllable in polysyllabic words with final stress. Syllables in which reduction occurred are referred to as weak." Later on the same page, he writes that "the place of stress in Polabian can always be predicted from the distribution of non-reduced and reduced vowels in an accentual complex if the final syllable was non-reduced, it must have carried the stress, if it was reduced, the stress was on the penultimate syllable (see Trubetzkoy 1929:77-84)."¹

¹ German loan words constitute approximately 20% of the known Polabian vocabulary. Evidence for penultimate or final stress was cited by Olesch 1979, where he showed that Middle Low German loanwords which normally carried initial stress were adapted to Polabian prosody as follows: words with final long syllables received stress there, e.g., *vorbot* 'prohibition' > Pb *farbot*, *platter* 'dish' > Pb *plater*, while those with final short syllables in Middle Low German received penultimate stress, e.g., *amptman* 'bailiff' > Pb *ammän*, *spade* 'spade' > Pb *spodě*. Hirt 1896 postulated fixed penultimate stress; others claim that Polabian was a free accent system. Horálek 1992:468 writes that the place of stress in Polabian was free and that "reduction took place in the position after the stress (either main or secondary), or before the stress (except in the syllable immediately preceding the stressed syllable)."

The relationship between vocalism and stress suggests that we might look for a phonological representation in which one of the two, either the distribution of the vocalism or the stress, is predictable. Luschützky and Reinhart 1991 took the position that Polabian stress is lexical and that it is the distribution of full and reduced vowels that is predictable. They derive vowel reduction by two rules, given in (4). One reduces a full vowel or diphthong between a full vowel (or diphthong) and a stressed vowel; the other reduces a vowel (or diphthong) in posttonic position in the last syllable of a word.

- (4) a. $V \rightarrow \check{V} / V_ \acute{V}$
 b. $V \rightarrow \check{V} / \acute{V}_ \#$

In postulating non-initial pretonic reduction and posttonic final syllable reduction, the analysis in (4) accounts for several occurring patterns in Polabian, as in (5a), and predicts the non-occurrence of others (5b).

- | | |
|---|---------------------------|
| (5) a. Occurring patterns | b. Non-occurring patterns |
| $V\acute{V}, \acute{V}\check{V}$ | $*\check{V}\check{V}$ |
| $V\acute{V}\check{V}, V\check{V}\acute{V}, \acute{V}VV$ | $*V\check{V}\check{V}$ |
| $\acute{V}VVV$ or $V\acute{V}VV$ | $*VV\check{V}\check{V}$ |
| $VV\check{V}\check{V}$ | $*VVV\check{V}\check{V}$ |

But the analysis has several shortcomings. First, it cannot predict several attested patterns from (1) and repeated below. (6a) requires two lexical stresses (or a secondary stress), / $\acute{V}\check{V}\check{V}\acute{V}$ /:

- | | | |
|----------------------------|-------------|-----------|
| (6) a. (1h) $VVV\check{V}$ | jolüvaic'ă | heifer |
| | lostovaic'ă | swallow |
| | zil'ozenă | iron, adj |
| | sredületně | midyear |
| | aipausteně | dropping |
| | perdojaikă | merchant |

(6b) requires either two lexical stresses (or a secondary stress), / $\acute{V}\check{V}\check{V}\acute{V}$ /, or a penultimate lexical stress, / $VV\check{V}\acute{V}$ /, but then the final syllable should be reduced and it is not.

b. (1j)	V̇VVV	pūd nēbis'ām sidēmdisq̇t zobāt'ūnt'ai	under the heavens seventy shells, mussels
---------	-------	---	---

Two main stresses (or a main and a secondary stress) are needed for (6c): /V̇V̇V̇V̇V̇V̇/; and (6d) requires two adjacent lexical stresses: /V̇V̇V̇V̇V̇V̇/, a very odd situation.²

c. (1k)	V̇V̇V̇V̇V̇	voitṙq̇dai v'onā ṫarujjanocē	hollow triune
d. (1l)	V̇V̇V̇V̇V̇	vitēdojimē voik̇āpuñonē citērnidelā	we give away castrated month

While it is true that historically Polabian did have free lexical accent, as did all of the Slavic languages, the argument for free lexical stress in eighteenth century Polabian is not entirely convincing. One problem is that full vocalism is not dependent on main stress alone. If we postulate secondary stresses on full vowels in order to explain their non-reduction, then bisyllabic and trisyllabic forms such as *l'ötū* 'year'; *t'öliū* 'wheel'; *gl̇avoī* 'heads'; *t'ül'onai* 'knees'; *kominē* 'stones'; *ṗatināc* 'bird', will have adjacent stresses, something not commonly found in lexical stress languages. Trisyllabic forms tend to prefer an alternating stress pattern. And in longer words, the rules in (4) have many exceptions; i.e., we need two lexical stresses or a secondary stress on the initial syllable to derive many forms in (6) above. Another problem with the Luschützky and Reinhart 1991 analysis is that it is not quite a phonologically free, morphologically lexical stress system: the lexical stress in the underlying forms always has to fall on the final or penultimate syllable in order for their rules to work. This is not as "free" a distribution of lexical stress as one might expect in a truly free stress system like Russian or Belarusian. Polabian is not a typical dynamic expiratory stress system, where vowel reduction bears a direct relationship to the position of stress. In Polabian full vowels occur in unstressed position, though reduced vowels are never stressed.

² It also predicts that V̇V̇V̇V̇V̇V̇ should yield V̇V̇V̇V̇V̇, though it does not seem to be attested. Given the paucity of the data, however, this is not a substantial criticism.

3 A metrical analysis

What is critical about Polabian is that *reduced vowels are not found in initial syllables* and that *reduced vowels are not found in adjacent syllables*.³ In Luschützky and Reinhart's analysis the non-occurrence of reduced vowels in initial and adjacent syllables becomes a mere stipulation of the rules in (4). In an analysis that takes vowel quality to be distinctive, such as that of Polański 1993, there is no way to account for these distributional restrictions. But I think that these two restrictions on Polabian vocalism could fall out from constraints present in Polabian phonology.

Let us start with the initial syllable which shows some unusual properties. Recall that we do not find reduced vocalism here. Kuryłowicz 1955 argued that this was evidence for fixed initial stress at some stage in the history of Polabian.⁴ Given the proximity of Germanic initial stress systems to Polabian, such a development is highly likely. Clearly, initial position was important because Polabian shows vocalization of weak jers here, especially if the jers were stressed or immediately pretonic.

(7) *Weak jers in first pretonic position word-initially*

*süpáti	>	sápät	'to sleep'	cf. Polish <i>spać</i>
*kütó	>	káto	'who'	cf. Polish <i>kto</i>
*płsí	>	pasai	'dogs'	cf. Polish <i>psy</i>
*tükáčĭ	>	tákáč	'weaver'	cf. Polish <i>tkacz</i>
*jĭme	>	jaimą	'name'	cf. Polish <i>imię</i>

cf. weak jers elsewhere: *büčelá > celä 'bee'; vütorŭjĭ > törë 'other'

The protection of weak jers in initial syllables shows that they were somehow prosodically prominent and therefore not subject to deletion. Perhaps the historical evidence could be related to the synchronic facts

³ Polański and Sehnert 1967 do include a few forms with a reduced initial syllable, e.g., *näparäd* 'at first', *näpüvodě* 'he harnesses' and a few compounds with adjacent reduced vowels, *cičěrnädĭst* 'fourteen', *siděmnädĭst* 'seventeen', and the verb 'to fall' which has both reduced vowels in initial syllables and adjacent reduced vowels, e.g., *pěpädeně* 'falling', *pěpädĭsü* 'falls', *pěpädĭsü* 'he has fallen', but in general the constraints do hold.

⁴ It is interesting to note that the attested patterns with five-syllable words are predominantly with a reduced vowel in the final syllable. This, together with certain properties of initial-syllable vocalism, suggests that at some point Polabian may have had a stage of initial stress, as Kuryłowicz 1955 argues. The pattern may also be a consequence of word length.

about distributional restrictions, specifically the absence of reduced vowels in initial syllables, if we posit a trochaic foot for all forms in Polabian with parsing from left-to-right, as in (8).

(8) *Trochaic metrical parsing*

a.	$[\sigma_S \quad \sigma_W]$	$[\sigma_S \quad \sigma_W]$
	ka to	mo tai
b.	$[\sigma_S \quad \sigma_W]$	$[\sigma_S \quad \sigma_W]$
	ma glä	t'ü näc
c.	$[\sigma_S \quad \sigma_W]$	$[\sigma_S \quad \sigma_W]$
	pa jä	vai c'ä
d.	$[\sigma_S \quad \sigma_W]$	σ
	muz dë	ne

This version has the advantage of assigning prominence to the initial syllable and it accounts for the absence of reduced vowels there. The problem is that some syllables are left unparsed and that actual word stress is not word-initial. Even if we were to begin the parsing algorithm in a right-to-left direction, the forms in (8a) with two full nuclei would be incorrectly stressed on the first syllable. Yet the initial syllable must be somehow marked as strong prosodically if we are to explain the non-occurrence of reduced vocalism there.⁵ The odd thing about Polabian is that while there are forms with adjacent full vowels,

⁵ An alternative analysis is to reconsider the representation of full and reduced vocalism on the skeletal tier. Because reduced vowels are not stressed we can assume that they are somehow different prosodically from full vowels and diphthongs. Suppose we represent this difference as one between moraic and non-moraic nuclei:

μ	μ
pa jä	vai cä

Word stress would then fall on the last mora of a word. Aside from the fact that this analysis takes the mora and not the syllable to be the stressable unit (but see Halle and Vergnaud 1987, Halle and Idsardi 1995 where segments may project a number of stressable units), the analysis falls short in two respects. First, it does not say anything about the distributional restrictions found on the vocalism. In principle, it does not rule out words consisting entirely of morainless nuclei, but there are no such words in Polabian. Second, it is not clear how syllabification would take place in such a system nor how word stress could be assigned if a word consisted entirely of morainless vowels (objections raised by Odden 1986 to Hyman's 1985 analysis of Chuvash and Russian jers).

there are none in which adjacent syllables have reduced vocalism. We seem to be missing a canonical equally balanced (bisyllabic) trochaic metrical foot: $[\sigma_{\mu}-\sigma_{\mu}]$. Instead, the facts of Polabian suggest a foot which is sensitive to syllable weight. In the Halle and Vergnaud 1987 system uneven trochees, i.e., left-headed quantity-sensitive feet, are part of the inventory of possible metrical feet. In Hayes' 1995 inventory, there is no uneven trochee. Instead, stress patterns are derived on the basis of three types of metrical feet: a syllabic trochee (evenly balanced), an iamb (unevenly balanced, right-headed) and a moraic trochee, i.e., a disyllabic moraic trochee or a monosyllabic moraic trochee (9).

(9) *Hayes (1995) foot inventory*, *L=light*, *H=heavy syllable*

syllabic trochee	(* .)			
	σ σ			
moraic trochee	(* .)	(*)		
	L L	H		
iamb	(. *),	or else	(. *)	(*)
	L H		L L	H

Given that a smaller inventory poses the more interesting theoretical possibilities, one would like to be able to account for the Polabian system in terms of fewer (or less marked) elements or processes. In some respects, Optimality Theory (Smolensky and Prince 1993, McCarthy and Prince 1993) provides a more insightful analysis. In this view, Polabian is a system with competing constraints and it is their interaction which results in the prosodic properties of Polabian. Predictable stress on the last full vowel of the word, the occurrence of only full vowels in initial syllables, and the restriction on adjacent syllables, all follow from the interaction of the following constraints:

- (10) **PARSE σ** : All syllables must be parsed into a foot.
BINARITY (μ): Prosodic heads must be binary with respect to moras (but see below).
RH-TYPE (Foot Type): Trochee.
ALIGN RIGHT (Hd, PWd, R, Wd): Align head of prosodic word with rightmost edge of word.

The high ranking of the first three constraints will favor (11) and rule out structures in (12).

(11) Possible parses (No violations of constraints in (10))

VV	[V][V], [V V]
VǞ	[V Ǟ]
VVV	[V] [V] [V], [V V] [V], [V] [V V]
VVǞ	[V] [V Ǟ]
VǞV	[V Ǟ] [V]
VVVǞ	[V] [V] [V Ǟ], [V V] [V Ǟ]
VǞVǞ	[V Ǟ] [V Ǟ]

(12) Violations of high-ranking constraints

	PARSE	BINARITY	FT:Trochee
[Ǟ V] Ǟ [V]	*	*	*
[V V] Ǟ	*		
[V] Ǟ Ǟ	**		
[Ǟ Ǟ]		*	
[V] [Ǟ V] [Ǟ]		*	*

These constraints account for most of the distributional restrictions on Polabian vocalism as exemplified by the forms in (13).

(13)	$[\bar{V}]_F - [\bar{V}]_F$ <i>jopt'ü</i> 'apple'	$[\bar{V} - \check{V}]_F$ <i>dübrě</i> 'good'	
	$[\bar{V}]_F - [\bar{V}]_F - [\bar{V}]_F$ <i>t'ül'onai</i> 'knees'	$[\bar{V}]_F - [\bar{V} - \check{V}]_F$ <i>manejsă</i> 'smaller'	$[\bar{V} - \check{V}]_F - [\bar{V}]_F$ <i>jopt'ědq̄b</i> 'apple tree'
	$[\bar{V}]_F - [\bar{V}]_F - [\bar{V} - \check{V}]_F$ <i>lostvoaic'ă</i> 'swallow'	$[\bar{V} - \check{V}]_F - [\bar{V} - \check{V}]_F$ <i>namănejsă</i> 'smallest'	

One interesting consequence of this analysis is that it explains why reduced vowels are not found in initial or adjacent syllables. The initial syllable must be parsed and it must be bimoraic in order to be the head of a trochaic foot. The interaction of BINARITY and PARSE σ also

explains why reduced vowels do not occur in adjacent syllables. Both are high-ranking constraints, so all syllables must be parsed. These constraints must be ranked above others such as FAITHFULNESS because input structures with a monomoraic initial syllable are not permitted. A syllable must either constitute a foot on its own (with a full vowel or diphthong) or it must belong to a prosodic foot. There can be no adjacent monomoraic syllables if all syllables must be parsed and if only bimoraic syllables may serve as heads of metrical feet. A monomoraic syllable would have to be preceded by a bimoraic one in order to be metrically parsed in a trochaic system. The assignment of word stress is by alignment (14), and the main word stress falls on the head of the rightmost metrical foot.⁶

(14) ALIGN RIGHT (Hd, PWd, R, Wd): Align head of prosodic word with the rightmost edge of the word.

The constraints identified in (10) do not rule out the structures in (15) as possible trochaic parses, yet Polabian appears to reject an evenly balanced bisyllabic trochaic foot with adjacent full vowels, just as it rejects an evenly balanced bisyllabic foot with reduced vocalism.

(15) [V̄ V̄] jopt'u 'apple'
 [V̄] [V̄ V̄] t'ul'onai 'knees'

If the word stress were aligned with the head of the rightmost trochaic foot in (15), then we would get forms with penultimate stress instead of final stress. So the system must contain some competing constraint on what may occur as the weak member of a prosodic foot, i.e., no heavy syllables in weak position, **[μμ] in weak prosodic position*. Full vowels always constitute a metrical foot on their own, if possible. The constraint on the membership of weak prosodic position may be formalized as (16).

⁶ One might also consider whether the penultimate or final stress pattern together with the restrictions on the initial syllable might not be a consequence of other competing alignment constraints. It is clear that metrical parsing must occur on the initial syllable, so the constraint ALIGN WORD EDGE LEFT: *Align the left word edge with the left edge of a metrical foot*, could be playing a role. This would favor parses such as [V V̄] over V̄ [V] and [V] [V V̄] over V̄ [V V̄], but since the forms in question also violate the PARSE constraint, the ALIGN WORD EDGE LEFT constraint would be redundant.

(16) **WEIGHT-TO-STRESS PRINCIPLE (WSP):** Heavy syllables are prominent in foot structure.

This constraint eliminates an evenly balanced foot of two heavy syllables, $*[\sigma_{\mu\mu}\sigma_{\mu\mu}]$, while not ruling out parses such as $[\sigma_{\mu\mu}]$, $[\sigma_{\mu}\sigma_{\mu\mu}]$, or $[\sigma_{\mu}\sigma_{\mu}]$.⁷ Because Polabian rules out both types of evenly balanced feet, $[\sigma_{\mu\mu}\sigma_{\mu\mu}]$ and $[\sigma_{\mu}\sigma_{\mu}]$, the WSP must be interacting with both FT:TROCHEE and BINARITY to compel parsing of quantity-sensitive trochees (17).

(17) *Polabian metrical feet*

$[\sigma_{\mu\mu}\sigma_{\mu}]$, $[\sigma_{\mu\mu}]$ Non-occurring: $[\sigma_{\mu\mu}\sigma_{\mu\mu}]$, $[\sigma_{\mu}\sigma_{\mu}]$

Constraint interaction offers certain advantages over analyses that operate with foot inventories or templates. For one thing, the constraints, TROCHEE, PARSE, BINARITY, and WSP eliminate the need for stipulating directionality on metrical parsing.⁸ In other words, the presence of trochaic parsing in the context of a general syllable parsing requirement and a binary head constraint suffices to account for all existing forms, and specifically for a bimoraic initial syllable. No alignment constraint is needed for metrical parsing. It is only the prosodic word head which must be aligned with the right word edge.

Another result of this analysis is that it reconciles the competing quantity versus quality arguments. Quantity in Polabian is related to prosody, but it is not represented as a phonemic distinction on segments. Polabian prosody suggests that we might find the distinction between syllable quantity and segment quantity to be a useful one in Slavic, even if it does not entail closed versus open syllables. It is clear

⁷ If quantity is so critical to metrical parsing, one might expect the footing to be iambic in Polabian. In all cases an iambic foot would leave final reduced vowels unparsed. The non-metrification of final reduced vowels could be attributed to NONFINALITY, but this analysis faces two other problems. In iambic systems one often sees a preponderance of final heavy syllables and weak initial ones, yet the situation in Polabian seems to be just the opposite. Typologically, all other Slavic languages and the neighboring German exhibit trochaic metrical footing, so if Polabian is an iambic system, it would be unusual in this context.

⁸ Otherwise, the footing of the full initial syllable would be the result of either a left-to-right parse beginning at the left edge of the word and adhering to the requirement for head binarity or a right-to-left direction which would have forced a foot on the initial syllable by adhering to the general parsing requirement.

that an autosegmental representation of length is particularly helpful in cases such as these.

Finally, the OT approach results in an analysis that is less marked in terms of universals. The prosodic system of Polabian, which seems to favor a quantity-sensitive trochee, is a problem for metrical foot inventories. Either it constitutes an exception (for the Hayes 1995 version) or it presents a highly marked case (Halle and Vergnaud 1987; Prince 1990). But when described as the result of several universal constraints, then the system is the product of various well-motivated universal principles. Both quantity distinctions and trochaic feet are unmarked in the context of West Slavic languages; their coincidence is found in the Polabian prosodic system.

4 Problems and discussion

The metrical analysis sketched above still leaves several issues unresolved. The parsing of all syllables into metrical feet implies a type of secondary stress on all heads (S. Davis, p.c.). Phonetically, by being longer and therefore stronger, full vowels are more prominent than reduced vowels, but Polabian has only one main stress per word. Metrical parsing constraints make a claim about the non-occurrence of adjacent “unstressed” syllables, but they do not rule out or control the distribution of full or “stressed” syllables in non-initial position.

Another way to look at Polabian vocalism might be to operate with vowel reduction constraints (S. Franks, p.c.), perhaps in the form of NO VOWEL REDUCTION IN INITIAL SYLLABLES and NO VOWEL REDUCTION IN ADJACENT SYLLABLES. The former is fairly well motivated phonetically, but given that languages such as Russian with strong dynamic stress and vowel reduction do show reduction in strings of adjacent syllables, the latter constraint is somewhat questionable. This interpretation of Polabian vocalism does not inherently connect vowel reduction to any type of prominence, and if it did (by assuming lexical stress) then it would have some of the same problems faced by the Luschützky and Reinhart 1991 analysis.

In any case, what we gain in phonology, we gain at the expense of morphology. Analyses which derive the vocalism from lexical stress placement have an advantage over those which postulate underlying distinctions between full and reduced vocalism (Trubetzkoy 1929, Polański 1993, and this analysis) in terms of more regular morphology. Derivational analyses with lexical stress can postulate one underlying

representation for a morpheme albeit with different stress in some cases, e.g., /man+/ 'small', /man+ejs+a/ 'smaller', /na+man+ejs+a/ 'smallest', /jopt'ú/ 'apple', /jopt'údqb/ 'appletree' and derive the surface forms, *manejsă*, *namănejsă*, *jopt'ú*, *jopt'édqb* by vowel reduction rules. In the Optimality Theory analysis we would have to show that the surface reduced variant of the root vowel is preferred in the superlative form and the non-reduced one is preferred in the comparative form for 'small'. Given that the prosodic patterns VVVV̇, VVV̇V̇, and VVV̇V̇ are all found in Polabian, the solution to this problem is not immediately obvious.

The difficulty that Polabian poses for a variety of theoretical approaches is intriguing. From a metrical point of view the existence of monosyllabic moraic trochees ($\sigma_{\mu\mu}$) and unevenly balanced trochees ($\sigma_{\mu\mu}\sigma_{\mu}$) to the exclusion of bisyllabic trochees ($\sigma_{\mu}\sigma_{\mu}$), ($\sigma_{\mu\mu}\sigma_{\mu\mu}$) requires that quantity-sensitivity be dominant in the context of full metrical parsing. It also suggests that there is a constraint on HEAD BINARITY. It is not just the case that bimoraic syllables automatically get parsed as heads according to the weight-to-stress principle (WSP), but it is also true that monomoraic syllables cannot be prosodic heads in Polabian. This situation, a mirror image to the canonical iambic foot, is apparently typologically quite rare. How did the Polabian situation come about?

5 A historical perspective

In spite of the limited data available, internal and comparative reconstruction permits us to make some reasonable guesses about the development of Polabian. Slavists have long been puzzled by what they refer to as the progressive accent shift in Polabian from its original position in Common Slavic. Accepting that Common Slavic can be reconstructed with free lexical accent, we then recognize three basic types of accentual paradigms, acute with fixed root stress (barytone) realized as rising pitch accent; oxytone with post-root stress and probably rising or simply accent; and mobile with an alternation between stress on the initial syllable (circumflex or falling pitch accent) and on the post-root syllable. In Polabian the original acutes and circumflexes appear to have a shift of stress towards the end of the word (18a); the oxytone paradigm often shows retraction (18b).

(18) a. *Accent advancement: acutes and circumflexes**acute*

*lěto	>	l'otū	year	cf. R lěto
*pivo	>	paivū	beer	R pivo
*malina	>	molaina	berry	R malina

circumflex

*golvy	>	glávoi	heads	cf. R gólovy, golová
*sestry	>	sestrái	sisters	R s'óstry, sestrá
*golqbi	>	d'olqb	pigeon	R gólub
*jagody	>	jod'ádái	berries	R jágody

b. *Accent retraction: oxytones*

*gnězdo	>	gn'ozdě	nest	cf. R gnezdó
*jědro	>	jōdrě	kernel	R jadró
*luna	>	launā	moon	R luná
*rešeto	>	rišetě	sieve	R rešetó

Kortlandt 1989 proposes that Polabian retained posttonic quantity in acutes and circumflexes and pretonic quantity in oxytones and that it marked quantity by keeping full vowels in these positions.⁹ The preservation of pretonic length in oxytones is widely found throughout Slavic and in many areas it did in fact result in accent retraction. This retraction in Polabian would have produced a conjunction of length and accent/stress as in (19).

(19)	Oxytone:	[σ	σ']	>	[σ'	σ]
		μμ	μ		μμ	μ

⁹ The preservation of posttonic length was not restricted to the immediately posttonic position, e.g., jágody > jod'ádai 'berries', *vū xoldě > vā xlāde 'in the cold', *kámény > komānai 'Dutch oven', in some polysyllabic forms. The exceptions to retraction in the oxytone (end-stressed) paradigm are some bisyllabic forms with original short root vowels, e.g., *rebro > Pb rebrū 'rib', which would tend to support the case for associating stress with length, except that retraction is found in some other bisyllabic forms with short root vowels, e.g., *noga > Pb nŭgā 'foot', *kosa > Pb t'ósā 'scythe' (cf. R nogá, kosá) and fairly regularly if the word was polysyllabic, e.g., Pb risetě 'sieve'. This may have been a general and fairly early Slavic retraction.

Polabian also neutralized the pitch distinction between rising (acute) and falling (circumflex) syllables in favor of stress fairly early in its development (see (20)). This probably entailed a shortening of the stressed syllable as it seems to have done elsewhere in northern Late Common Slavic.

(20) *Early Polabian developments: Loss of pitch (and length) under accent* ([= prosodic foot, H = high tone, ′ = stress)

Acutes (rising pitch accent with posttonic longs)

[σ′]	σ		[σ′]	σ
μμ	μμ	›	μ(μ)	μμ
	H			

Circumflexes (falling pitch accent with posttonic longs)

[σ′]	σ		[σ′]	σ
μμ	μμ	›	μ(μ)	μμ

*Oxytones (rising (?) short vowel with pretonic longs)
inherently bisyllabic/bimoraic*

[σ	σ′]		[σ′	σ]
μμ	μ	›	μμ	μ
	(H)			

The neutralization of acute and circumflex syllables in terms of accent and length and the retention of length in unstressed position probably resulted in a stage of fixed initial stress. Length distinctions could now occur in both stressed (retracted oxytones) and unstressed syllables, much like the system found in Czech today. In bisyllabic forms the prosody appears as in (21). Unstressed short vowels reduced.

(21) Acute/circumflex: [σ′ σ] Oxytone: [σ′ σ]
 μ μμ μμ μ

Stress on the initial syllable protected it from vowel reduction; elsewhere, short syllables became reduced. The innovation of Polabian

was to change the direction of prosodic parsing. Instead of assigning word stress to the first syllable, Polabian adopted the Polish model and calculated stress position from the end of the word (right-to-left directionality). Unlike Polish, however, which has a syllabic trochee, Polabian retained the connection between quantity and stress, perhaps because vowel reduction foregrounded the prominence of long syllables, with the result that word stress is found on the rightmost full syllable. Thus stress appears to have shifted forward in the acutes and circumflexes, and backwards in the oxytones. And the distribution of the vocalism reflects both original quantity in unstressed position as well as initial stress before vowel reduction took place.

5 Conclusion

Polabian presents an interesting problem for metrical theory in which the uneven trochee is rare, if found at all. Yet this type of metrical prominence does correlate to some extent with the phonetic duration of stressed syllables. In the history of a related Slavic language, Slovene, this correlation was so strong that all stressed vowels in non-final position lengthened, which appears to be the creation of a trimoraic trochaic foot (Bethin 1998). Slovene did retain a length contrast in monosyllables. One wonders whether stress systems that derive from accent systems (with pitch or tone and/or stress) are prosodically different from the types of rhythmically organized systems described in Hayes 1995.

In any case, the preservation of posttonic length and the reanalysis of stress assignment to the rightmost long syllable produced what may be interpreted as a shift of stress in Polabian. The historical development accounts for much of what is attested in Polabian, including adjacent syllables with full vocalism. The probable development of a stress on initial syllables facilitated not only the preservation of full vocalism in that position but it also explains the presence of adjacent full syllables in original trisyllabic oxytones (V-V- \check{V}) as well as in original acutes and circumflexes (V-V-V), (V- \check{V} -V). Once length became prominent in Polabian the system was inherently quantity-sensitive. But the metrical foot, due to the retraction of stress in oxytones and the merger of the acutes with the circumflexes, was predominantly trochaic, a strong-weak metrical grouping. We have then a trochaic system with quantity distinctions in which quantity still

retains significant prominence. The awkwardness of short stressed syllables with quantity prominence in unstressed position could be resolved by the loss of length contrasts, as happened in Polish, or by a recognition of length prominence, as happened in Polabian.

The prohibition on adjacent reduced syllables is not so clearly a product of these historical events. In principle, there is nothing to prohibit a sequence of reduced syllables in longer polysyllabic words. So it appears that some other metrical factors came into play here. I took the absence of adjacent reduced syllables to be a significant prosodic generalization about the structure of Polabian prosody and tried to show how this might be the result of metrical constraints. It was not just the case that long syllables were prominent but that only long syllables could function as heads of metrical feet.

Although the metrical analysis faces certain problems (especially in terms of morphology), it can account for some phonological properties of Polabian and its historical development that previous analyses have not been able to do. Polabian may provide evidence for the metrical parsing of all syllables in spite of the fact that it has only one main word stress. Word stress is fully predictable, and associated with the rightmost prosodic head. A metrical analysis within the Optimality Theory framework is able to make sense of some distributional restrictions on Polabian vocalism and in an interesting way, it situates Polabian within its West Slavic linguistic context. Like in Polish, the main stress falls on the rightmost foot, though like other West Slavic languages, Polabian retains a certain degree of prominence on the initial syllable. Polabian has quantity-sensitive trochaic feet as a result of several competing constraints. In this respect Polabian is typologically consistent with the rest of West Slavic, all of which exhibits trochaic metrical parsing and some of which still retains quantity distinctions together with fixed stress (Czech, Slovak, Upper Sorbian).

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Formal and Lexical Semantics and the Genitive in Negated Existential Sentences in Russian*

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1 Goals

1.1 Theoretical concerns and general goals

The theoretical concern of this paper is the integration of formal and lexical semantics, more specifically the traditions of (post-) Montague Grammar and the Moscow semantic school, respectively. We propose to represent lexical meaning in the form of meaning postulates, and the output of compositional semantic interpretation in a formula of intensional logic in which lexical items are primitives, and to integrate lexical and compositional information via entailments from these (and other) sources.

We think of the content of a text as a *theory* determined by a set of axioms together with their entailments. The axioms come from various sources: lexicon, compositional semantics, context and background knowledge. (Broader and narrower notions of semantic or semantico-pragmatic interpretation correspond to the inclusion or

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exclusion of various potential sources of axioms.) Such a theory characterizes the class of all models that are consistent with the content of the given text, or of the text together with aspects of its context. Some of the most general axioms, which may be taken to form part of the theory of any text, are those that represent some of the most general constraints on possible models of a given language, axioms which contribute to what the Moscow School calls *naivnaja kartina mira* 'the naive picture of the world' (Apresjan 1974), and what formal semanticists, following Bach (1986), call Natural Language Metaphysics.

We do not pretend to have an articulated view of the nature of all the different sorts of axioms that may play a role in the "theory" of a text, but here we will illustrate some of the possibilities.

1.2 *The Genitive in Negated Existential Sentences*

The Russian genitive with subjects of negated existential sentences (the NES construction, in Babby's terms) provides an interesting empirical domain for examining the interaction of lexical and compositional semantics and testing theoretical approaches. From the work of Babby (1980), Padučeva (1992,1997), and others it seems clear that an account of the NES construction involves at least the syntax and Theme-Rheme (or topic-focus) structure of negative sentences, the lexical semantics of verbs, and often additional context-specific presuppositions or implicatures.

We will follow Babby in analyzing the NES construction as implying the negation of existence of "the NP"; but not as "denying that the NP has a referent," rather as denying that "NP" exists *in a given "location."* What the relevant "location" is depends in part on the Theme-Rheme structure. The relativization of "existence" to a "location" makes it possible to subsume *byt'* under the class of verbs

covered by Babby's analysis, and to account for NES sentences with proper names and other definite NPs as their (genitive) subjects.

We suggest a compositional interpretation of the NES construction which involves an assertion part negating the literal predication of the given verb to the given subject and location, together with a presupposition that that verb in that sentence is equivalent to "be" or "exist." The role of the additional axioms that we discuss (lexical, encyclopedic, contextual) is seen to consist in providing the support needed for such a presupposition to hold in a given context.¹

2 "Existence" and "existential sentences"

2.1 Babby's distinction between NES and NDS

Babby contrasts negated existential sentences (NES), with genitive subjects, from "negated declarative sentences" (NDS), with nominative subjects, as in the following (his (81a-b), from Icković 1974):

- (1) Otvet iz polka ne prišel.
 Answer-NOM-m-sg from regiment NEG arrived-m-sg
 'The answer from the regiment has not arrived.'
- (2) Otveta iz polka ne prišlo.
 Answer-GEN-m-sg from regiment NEG arrived-n-sg
 'There was no answer from the regiment.'

Chart (3), from Babby, shows a "scope of assertion" difference, argued by Babby to follow from Theme-Rheme differences.

¹ We neglect much existing syntactic work to focus on semantics. Among important issues we do not address are the potential unification of subject and object genitives, Pesetsky's (1982) assumption of an empty quantifier governing the genitive NP, and the suggestion of Perelstvaig (1997) and others of a connection with negative polarity phenomena.

(3)	AFFIRMATIVE		NEGATED
EXISTENTIAL	[_{Scope of A} VP NP]	→ _{NEG}	[_{ne} VP NP _{gen.}]
DECLARATIVE	NP [_{Scope of A} VP]	→ _{NEG}	NP _{nom} [_{ne} VP]

Although Babby generally characterizes NES's as having the entire sentence inside the scope of negation, he notes that there may be an optional locative outside the scope of negation. Below we will make "location" obligatory in NES's but possibly implicit.

2.2 Sentences with *byť*'

Babby does not claim that his analysis applies to sentences with *byť*'. He argues that since the main assertion in an NES is a denial of existence of the referent of the subject NP, NES's should normally not permit definite NPs as subjects; but sentences with *byť*' do commonly allow the genitive of negation with proper names and other definite NPs. Babby claims that the sentence (4) below cannot be an existential sentence because of its definite subject and therefore must be a "locative sentence," a type of NDS, with "be at the lecture" as the negated part, which goes contrary to the generalization in 2.1 above.

- (4) Ivana ne bylo na lekcii
 Ivan-GEN-m-sg NEG was-n-sg at lecture
 'Ivan wasn't at the lecture.'

However, *byť*' is in a sense a "basic" verb of existence ("being"), and as many have observed, all NES's can be approximately paraphrased as NES's with *byť*', as illustrated by the following "equivalences," the

nature of which will be discussed in what follows.

- (5) a. Otveta ne prišlo =
- Answer-GEN-m-sg NEG arrived-n-sg =
- Otveta ne bylo
- Answer-GEN-m-sg NEG was-n-sg
- ‘No answer came.’ = ‘There was no answer.’
- b. Moroza ne čuvstvovalos’ (Babby 1980, p.59) =
- Frost-GEN-m-sg NEG be-felt-n-sg =
- Moroza ne bylo
- Frost-GEN-m-sg NEG was-n-sg
- ‘No frost was felt.’ = ‘There was no frost.’
- c. Posudy na stole ne stojalo
- Dishes-GEN-f-sg on table-LOC-m-sg NEG stood-n-sg =
- Posudy na stole ne bylo
- = Dishes-GEN-f-sg on table-LOC-m-sg NEG were-n-sg
- ‘No dishes stood on the table.’ = ‘There were no dishes on the table.’

We believe with more careful attention to the interpretation of “existence” in “existential sentences,” sentence (4) can indeed be interpreted as an existential sentence, and Babby’s analysis can work for existential sentences with *byt’* as well as for existential sentences with lexical verbs.

2.3 “Being” and the roles of “thing” and “location”

We understand existence, or “being,” in the sense relevant to NES’s, as a potentially temporary relation between some “thing” and some “location.” We may accept Jackendoff’s (1972) metaphorical-structural extensions of “being in a location” to include “being in

some state," "occurring in some spatiotemporal region," "being in someone's possession," extending also to "being in the speaker's (or an observer's) perceptual field" (Padučeva 1992, 1997). We will treat "thing" and "location" as basic roles of verbs of being, or better, as roles of the situations denoted by existential sentences: *BE(THING,LOC)*.² Theme-Rheme differences, the subject of Section 3, distinguish ES's, in which the "location" is the Theme, from DS's, in which the "thing" is the Theme.

In "existential sentences," then, some "location" is given (Thematic Location) or contextually presupposed (implicit Thematic Location), and it is asserted that in that location there is ("exists") some "thing" of some sort.

(6) "EXISTENCE IS RELATIVE" PRINCIPLE:

Existence (in the sense relevant to AES's and NES's) is always relative to a "location."

The principles that determine which "location" is the one relative to which an existence claim is being made (if any) in a given sentence are related to Theme-Rheme structure. We believe that these principles make the analysis of sentences with *byt'* consistent with Babby's analysis of sentences with lexical verbs. We discuss these principles in Section 3 below, and their interaction with existence presuppositions and their location roles.

² Our "Thing" role may well be Jackendoff's (1972) thematic role Theme (not to be confused with Theme vs. Rheme), which would fit analyses of the relevant NPs as "underlying objects" of Unaccusative verbs (Pesetsky 1982 and others), and might predict non-obliqueness. Hana Filip (p.c.) suggests that our Thing and Loc roles probably have a status between conceptual structure and syntax, as argued for by Fillmore and as found in Dowty's work on lexical meaning.

3 Theme-Rheme structure, presupposition, and locations

3.1 Conditions for Genitive of Negation: *Babby's basic scheme*

Babby's final formulation of his rule of genitive marking in NES's (his (160)) is given in (7) below.

(7) [_{Rheme} V NP] NEG
 → [ne V NP_{gen.}]

Conditions:

(a) NP is indefinite [we disagree - BHP and VB]

(b) V is semantically empty [discussed in Section 4 below]

We agree with Babby, and with Prague school linguists such as Hajičová and Sgall, that scope of negation is directly correlated with Theme-Rheme structure. In "existential sentences," the location is Thematic, and both the "thing" and the verb are Rhematic and hence fall within the scope of negation; so negation in NES's negates existence in the Thematic location. In "Declarative" sentences, the "thing" is Theme, and "its existence" stays outside the scope of negation; the Verb Phrase is Rheme and is negated. (When NP subject alone is Rheme, negating gives constituent negation.)

In our terms, the minimal difference between pairs such as Babby's and Arutjunova's examples (8a,b) below would be schematized as follows:

Existential S's: Location = Theme; 'Thing-being-in-it' = Rheme.

Declarative S's, including "Locative S's": Thing = Theme; 'Being-in-location' [or other predicate] = Rheme.

(8) a. [_{Theme} Na stole] [_{Rheme} byli knigi i
 On table-LOC-m-sg were-m-pl book-NOM-f-pl and
 žurnaly]
 magazine-NOM-m-pl

‘On the table there were books and magazines.’

- b. [_{Theme} **Knigi** **i** **žurnaly**]
 Book-NOM-f-pl and magazine-NOM-m-pl
 [_{Rheme} **byli** **na stole**]
 were-m-pl on table-LOC-m-sg
 ‘(The) books and magazines were on the table.’

The negation of (8a) would use genitive, that of (8b) nominative.

We disagree with Babby’s claim that the NP subject in an NES must be indefinite; Babby’s text itself includes a number of counterexamples, and we have argued that there are many NES’s with *byt’* that provide further counterexamples. Rhematic NPs are typically indefinite, but definite NPs may also be Rhematic and may show up in genitive of negation in NES’s.

3.2 Theme-Rheme, presuppositions and assertions

We follow Hajičová (1973,1984) and Peregrin (1995) in the analysis of the connection between Theme-Rheme structure and presuppositions (and assertions) corresponding to this structure.³ For simplicity, we limit our discussion to presuppositions and assertions of existence. On their analysis, an NP like *knigi* ‘books/the books’ will carry an existence presupposition when it occurs in the Theme but not when it occurs in the Rheme; this is related to the function of the Theme in anchoring the sentence to the conversational background.

But existence, including the existence relevant for existence presuppositions, is always existence in some location. Let us

³ A few of our colleagues disagree with our (and Babby’s) claim that the genitive NP is always rhematic regardless of word order, but agree with our claims about what is presupposed. If these presuppositions do not follow from Theme-Rheme structure in the way sketched here, we do not know how to derive them.

informally label the different “locations” relevant to NES’s and NDS’s according to their roles in different “being-situations.”

Thematic location: the “location” of the “being-situation” of the sentence when that “location” is the Theme of the sentence; this includes both explicit Thematic location as in the NES’s (4) and (5c) and implicit Thematic location as in the NES’s (2) and (5a,b).

Rhematic location: the “location” of the “being-situation” of the sentence when that “location” is the Rheme of the sentence: (11a).

Reference location: (or “Anchor location”): the “location” of the “being-situation” of the existence presupposition associated with the Theme of the sentence. For a sentence expressing a “being-situation,” if the “thing” (typically the subject) is Theme (as in NDS’s), then Reference location will be the “location” contextually associated with that “thing” – a part of the conversational background, analogous to “Reference time.” Existence in the Reference location is what we often informally describe as existence in the “universe of discourse.” If the “location” is Theme, as in (4), the associated existence presupposition guarantees the existence of that location (see 3.4). In that presupposition, the lecture plays the role of “thing,” and its location is the Reference location; in that case Thematic location is identical to or within Reference location.

Resource location: “location” associated with a presupposition of existence of a thing denoted by a referential NP like *Maša* ‘Masha’ in (9); where a Resource location is depends on the knowledge source, not on the structure of the sentence. This term is modeled on Barwise and Perry’s (1981) *resource situations*.

These distinctions are what enable us to subsume *byt’* under the verbs covered by Babby’s analysis. Sentence (4) illustrates the distinction between the situation of existing in the Thematic location and a backgrounded situation of existence in a Resource situation.

Sentence (4) asserts that Ivan did not exist in the Thematic location “at the lecture,” while presupposing he does exist in a Resource location “in the world.”

The “Thematic location” is sometimes a speaker’s (or observer’s) “point of view” location (see Padučeva 1992, 1997). This “Thematic location” may be implicit, as in (2) and (5a,b). And we believe that a perceptual verb always has a “location” role, explicit or implicit, which can be Thematic; we offer this as a possible reason behind Padučeva’s observation that perception verbs can always be used as “existential verbs” supporting a genitive of negation, as in (9).

- (9) Maši ne vidno
 Masha-GEN-f-sg NEG seen-n-sg
 ‘Masha isn’t to be seen.’

Sentence (9) asserts the nonexistence of Masha within the speaker’s perceptual field (the implicit Thematic location) without denying her existence “in the world” (the Resource location for the proper name).

3.3 NES’s and NDS’s: *their assertions and presuppositions*

An informal statement of the assertion made by an NES is given in the NES Principle below; it will be expanded upon in the discussion of the Presupposed Equivalence in Section 4.

NES PRINCIPLE: An NES denies the existence of the thing(s) described by the subject NP *in the “Thematic location.”*

We have seen examples with implicit Thematic locations associated with implicit observers. There are also cases, like (10), in which the implicit Thematic location is simply “the actual world,” yielding a literal denial of existence.

- (10) Edinorogov ne suščestvuet.
 Unicorns-GEN-m-pl NEG exist-sg
 ‘Unicorns do not exist.’

In an NDS, the NP subject or “thing” is always in the Theme, so it carries a presupposition of existence in the Reference location.

Just as the “Reference location” is associated with material in the Theme, so is “Reference time.” In (11a), from Apresjan (1980), the contextually specified past time is associated with the Theme “*Otec*”; the conversation must have been about “where Father was/ has been,” perhaps today, perhaps in his life. In (11b), the reference time must be some given seaside occasion, since “at the sea” is the Theme.

- (11)a. *Otec* ne byl na more.
 Father-NOM-m-sg NEG was-m-sg at sea.
 Father was not at the sea.
- b. *Otca* ne bylo na more.
 Father-GEN-m-sg NEG was-n-sg at sea.
 Father was not at the sea. (“There was no Father there.”)

In example (1) above, *Otvét* is in the Theme and it is presupposed that it exists in the “Reference location” or “universe of discourse.” The sentence asserts that it did not arrive. Sentence (2) asserts non-existence of the answer in “Thematic location” but says nothing about whether it exists in any other location, including the “universe of discourse.” This leaves the sentence open to pragmatic influences that may support or inhibit the “insinuation” (Padučeva 1997) that perhaps no answer exists at all.

3.4 Existence presuppositions for Thematic vs. Rhematic locations

Although most locative expressions are normally understood as involving locations which are presupposed to exist, it is predicted that a Rhematic location might in principle not be presupposed to exist, while a Thematic location must be presupposed to exist. This prediction seems to be confirmed by the difference between the somewhat awkward (12a) and the totally impossible (12b).

- (12) a. ?Ivan [Rheme ne byl na lekcii.]
 Ivan-NOM-m-sg NEG was-m-sg at lecture.
 Lekcii ne bylo.
 lecture-GEN-f-sg NEG was-n-sg
 'Ivan was not at the/a/his lecture. There wasn't any lecture.'
- b. *Ivana ne bylo [Theme na lekcii.]
 Ivan-GEN-m-sg NEG was-n-sg at lecture.
 Lekcii ne bylo.
 lecture-GEN-f-sg NEG was-n-sg
 'Ivan was not at the/a/his lecture. There wasn't any lecture.'

3.5 Summary scheme from a speaker's perspective

We may summarize the analysis presented so far from a speaker's perspective as follows: Suppose the speaker's intentions are as sketched in (13).

- (13) Theme = Loc, Message = NEG(BE(Thing, [Loc]))⁴

Then according to our analysis, the existence of Loc is presupposed, and the assertion is the negation of the being of Thing in that Loc.

The realization of these intentions, assuming that "Thing" is

⁴ We enclose "Loc" in square brackets as an informal indication that Loc, as Theme, is outside the scope of negation; see Peregrin (1995) for formalization and discussion.

expressed by an NP that meets the relevant syntactic requirements (such as non-oblique case), will involve (i) putting the NP expressing the Thing into Genitive case, and (ii) optionally substituting a lexical V for *byt'* to express BE, if there exist axioms (see Section 4) supporting the equivalence of V and *byt'*.

4 Weak verbs and the sources of their existential “axioms”

From the NES PRINCIPLE in 3.3 it follows that an NES presupposes the equivalence (in the context of the given S) of the “existence predicate” and the predicate “literally” corresponding to the verb of this S or, roughly speaking, of the verb *byt'* and this verb. That is, NES's such as those in (5) above have the same truth and falsity conditions as their counterparts with *byt'*. (We ignore the subclass of verbs of “appearing” to avoid aspectual complications.) We state this presupposed equivalence in (14) below; its source is discussed in Section 4.7.

(14) PRESUPPOSED EQUIVALENCE:

V (THING, LOC) \iff BE (THING, LOC)

But how is this equivalence possible with verbs whose literal meaning is clearly not simply “exist” or “be”? The usual answer is that in NES's, “weak” verbs are used: verbs which have become semantically empty, at least when occurring in combination with the given subject NP.

In the framework of our paper the question concerning properties of these verbs and reasons for their “weakness” can be approached in the following way: Suppose we assume that the lexical verbs have their normal meanings, whatever those are, so that it is not the case that they are simply semantically equivalent to *byt'* in these sen-

tences. Then we ask: what types of further axioms can we find holding for the given S in the given context (i.e., contained in the theory of the given S in the given context), whose presence could contribute to making this equivalence a “locally valid” theorem? What is the nature and what are the sources of such axioms?

Such a question is in principle open-ended, but let us list a few cases. Some are discussed in the literature, some can be found lying on the surface; we are trying to offer a slightly different perspective to help integrate existing insights.

For each case below, we give an example NES followed by the equivalence statement presupposed by the NES PRINCIPLE; then we show what sorts of supplementary axioms might be operative in the given context to yield the equivalence.

4.1 Dictionary axioms

(15) a. NES: Ne belelo parusov na gorizonte.

NEG shone-white-n-sg sails-GEN-m-pl on horizon

‘No sails were shining white on the horizon.’

b. Presupposed Equivalence:

Na gorizonte belel parus \Leftrightarrow

On horizon shone-white-m-sg sail-NOM-m-sg \Leftrightarrow

Na gorizonte byl parus

On horizon was-m-sg sail-NOM-m-sg

‘A sail shone white on the horizon.’ \Leftrightarrow ‘There was a sail on the horizon.’

c. ‘Dictionary axiom’ (part of lexical semantics):

belet’ \Leftrightarrow byt’ belym (in the field of vision)

to shine-white \Leftrightarrow to be white

d. Dictionary or encyclopedic axiom; ‘common knowledge’:

Parus kak pravilo belyj.

Sail-NOM-m-sg as a rule white-NOM-m-sg
 ‘Sails as a rule are white.’

With (15c) and (15d) we can almost satisfy the presupposition of equivalence in (15b); the equivalence only holds under further conditions such as the existence of a potential or actual observer whose field of vision includes the relevant location. In a context in which such further conditions can be consistently assumed to be met, (15c-d) together support the equivalence in (15b). Since (15c-d) are common knowledge, (15b) is entailed in normal contexts, and genitive of negation is therefore a normal choice with that combination of verb and subject.

4.2 Dictionary + contextual axioms

Modification of the previous example:

(16) a. NES: Ne belelo domov na gorizonte..
 NEG shone-white-n-sg houses-GEN-m-pl on horizon
 ‘No houses were shining white on the horizon.’

b. Presupposed Equivalence:

Na gorizonte beleli doma $\langle \implies \rangle$
 On horizon shone-white-m-pl houses-NOM-m-pl $\langle \implies \rangle$
 Na gorizonte byli doma
 On horizon were-m-pl houses-NOM-m-pl
 ‘Houses shone white on the horizon.’ $\langle \implies \rangle$ ‘There were
 houses on the horizon.’

c. ‘Dictionary axiom’ (part of lexical semantics):

belet’ $\langle \implies \rangle$ byt’ belym (in the field of vision)
 to shine-white $\langle \implies \rangle$ to be white

d. Doma kak pravilo belye. (Normally FALSE)

house-NOM-m-pl as a rule white-NOM-m-pl
 'Houses as a rule are white.'

In contrast to the case above, houses normally come in a great variety of colors and are not normally presumed to be white. But if the context includes the information that in this region, (16d) holds, then the dictionary axiom (16c) together with the contextual axiom (16d) will play the same role as the axioms (15c-d) in the previous example; together they entail the equivalence (16b).

Note: From the speaker's point of view, the axioms generate the equivalence (16b), thereby "bleaching" the verb *belet'* and licensing the use of the genitive of negation.

From the hearer's point of view, the use of genitive of negation signals that there must be some axioms besides (16c) accessible in the context to support the equivalence (16b).

4.3 Axioms of "free choice"

Example (17), a "free choice" case, illustrates similar patterns of reasoning with different sources of axioms. If we hear the NES (17a), we are required to presuppose the equivalence (17b) (involving an implicit Thematic location), and we can easily accommodate supporting contextual assumptions. With a corresponding NDS like (17c), we must assume the contrary, since in (17c) the existence of the frost (the Theme) in the "Reference location" is presupposed. A non-contradictory interpretation of (17c) therefore requires the assumption, or "axiom," that frost can exist without being felt, and that assumption is also easy to accommodate.

(17) a. Moroza ne čuvstvovalos'. (Babby 1980, p.59)
 Frost-GEN-m-sg NEG was-felt-n-sg

'No frost was felt/ There was no frost.'

b. Presupposed Equivalence:

Moroz čuvstvovalsja <=>.

Frost-NOM-m-sg was-felt-m-sg <=>

Moroz byl

Frost-NOM-m-sg was-m-sg

'Frost was felt.' <=> 'There was frost.'

c. Moroz ne čuvstvovalsja.

Frost-NOM-m-sg NEG was-felt-m-sg

'The frost was not felt.'

4.5 Lexical functions

The notion of 'lexical functions' was introduced by Žolkovsky and Mel'čuk (1967) for fixed cooccurrences of various types, and Babby (1980) discusses the applicability of this notion in explaining why the classification of given verbs as "weak" or not is often highly dependent on the choice of subject. The lexical function **Func₀** is illustrated by such pairs as the following, in which the choice of verb is a function of the choice of subject noun:

- | | | |
|------|----------------|-----------------------------|
| (18) | problema stoit | 'the/a problem stands' |
| | gazeta vyxodit | 'the/a newspaper comes out' |
| | zapax isxodit | 'the/a smell issues from' |

The lexical function **Oper₁**, involving transitive verb – object pairs such as *nanosit' udar* 'to strike a blow', *okazyvat' pomošč* 'to render help', also plays a role in derived intransitive constructions. Žolkovsky and Mel'čuk claimed that the verbs in such expressions are "empty," and have to be listed in the dictionary with the associated nouns, as values of the given functions for those nouns. It may

be that this claim is too strong in an absolute form and that the usage of verbs in such expressions depends at any rate partly on the semantic structure of the corresponding verbs and nouns and of the construction in which they occur. But from the point of view of the present discussion we agree with Babby that these functions, which we view as lexical axioms, govern the usage of verbs in the corresponding AES's and NES's.

4.6 "Genitive" verbs

Let us return to the issue of which verbs can be "genitive" and the nature of their "weakness." What we conclude is that NES's may contain any verb which in a given context for one reason or another may be considered equivalent to *be* (or *appear* - "begin to be," etc.). Since the axioms supporting this equivalence may come in part from the context in which the sentence is used, a "list" of such verbs is impossible, as noted by Babby and others. When such axioms cannot be reasonably assumed, the NES construction is impossible: its presupposed equivalence is inconsistent with presuppositions of the verb or of other parts of the sentence, or with our representation of reality, or with our suppositions about the given context.

4.7 Deriving the Presupposed Equivalence.

For probably all verbs which can be used in ES's, there is a lexical axiom giving one half of the "Presupposed Equivalence" (14).

(19) LEXICAL 'EXISTENCE' AXIOM:

V(THING, LOC) \implies BE (THING, LOC)

The other half we tentatively regard as a specific presupposition of the construction itself. (This is also our interpretation of Paduč-

va's (1997) remarks that the genitive is used only when this "component of meaning" is already present in the contextualized semantics of the negated verb.) We do not have a compositional derivation of this presupposition. It may arise as an implicature resulting from the use of the marked genitive construction to signal non-thematic status, and hence lack of existence presupposition, of the Thing; but this is so far just a speculation.

(20) PRESUPPOSITION OF NES:

$\neg V(\text{THING}, \text{LOC}) \implies \neg \text{BE}(\text{THING}, \text{LOC})$

or equivalently: $\text{BE}(\text{THING}, \text{LOC}) \implies V(\text{THING}, \text{LOC})$

The Presupposition of the NES together with the Lexical 'Existence' Axiom together give the "Presupposed Equivalence" (14) of the predicate V with the existence predicate.

5 Scheme of a "theory of an existential sentence"

In the previous sections, we have described or alluded to a number of components of the "theory" (in the sense of Section 1.1) corresponding to an ES (NES or AES), and some aspects of the "theory" of an ADS or a NDS. The main parts of a theory corresponding to an ES include:

1. Compositional semantic interpretation of the AES or NES construction. For an NES, we represent this as (21).

(21) ASSERTION OF NES:

$\neg V(\text{THING}, [\text{LOC}])$

2. Presuppositions derived from the Theme-Rheme structure of the ES. We have stated these informally (and contrasting presupposi-

tions for DS's) in Section 3. In an optimal semantic framework, 1 and 2 undoubtedly belong together in a single articulated whole, as would be done in a dynamic semantic framework, or in the framework of Peregrin (1995) or Hajičová, Partee and Sgall (in press).

3. Presuppositions derived from other sources, such as the existence of the referents of proper names in some Resource location.

4. "Dictionary" and "encyclopedic" axioms, associated with lexemes used in ES's and with concepts of various realia (things, action-types, etc.) described by these lexemes. We see the investigation of such axioms, which may be an open class, as the content of much of the extensive work in lexical semantics in the Moscow school. We have mentioned in Section 4 a small sample of the relevant axioms that play a crucial role in the interpretation of ES's.

5. Contextual, situational, perspectival, and maybe other kinds of axioms used by the speaker/hearer/writer/reader in the context of a given occurrence of an ES. These were also illustrated in Section 4.

We have discussed each of these briefly in earlier sections. One of our main concerns in this investigation has been to understand the integration of axioms that come from different sources, and some of these interactions have been illustrated in Section 4 above.

In conclusion, we reiterate our admiration for the pioneering and extremely insightful work of Babby, which we have largely followed, integrating syntax, semantics, lexicon, and context, and for the insights of Paducheva which were a starting point for the present work. Here we have offered just a modest addition, some progress in the semantic analysis, unifying lexical verbs and *byt'*, and using this domain as a testing ground for exploring our proposed means for the integration of formal and lexical semantics.

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On Multiple WH Movement in Slavic*

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1 Introduction

Slavic languages pose a number of interesting questions for the cross-linguistic analysis of *wh*-movement constructions. As is well-known, in languages such as Polish or Bulgarian, all *wh*-phrases must move to a clause initial position in surface form, as shown in (1) and (2).

- (1) a. **Co gdzie** Jan położył? Polish
 what where John put
 ‘What did John put where?’
 b. ***Co** Jan położył **gdzie**?
 c. *Jan położył **co gdzie**?
- (2) a. **Kāde kakvo** složi Ivan? Bulgarian
 where what put Ivan
 ‘Where did Ivan put what?’
 b. ***Kakvo** složi Ivan **kāde**?
 c. *Ivan složi **kakvo kāde**?

Rudin (1988) convincingly shows that there are important differences in *wh*-movement structure internal to Slavic itself. In one group of languages, including Polish, Serbo-Croatian and Czech, the first *wh*-phrase in a multiple *wh* construction must be analyzed as being in a higher position than its companions. Adverbs, for example, can follow the first *wh*-phrase in a sequence (3a). By contrast, in a second group of languages, exemplified by Bulgarian, the *wh*-phrases in a multiple *wh*

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construction are all in basically the same position. Adverbs thus have to follow all *wh*-phrases in a sequence (3b).¹

- (3) a. **Ko je prvi koga** udario? Serbo-Croatian
 who has first whom hit
 'Who hit whom first?'
- b. Zavisí ot tova **koj kogo prúve** udaril. Bulgarian
 depends on that who whom first has hit
 'It depends on who hit whom first.'

The two groups of languages also exhibit different behavior with respect to the Superiority Condition:

- (4) a. **Koj kogo** vížda? Bulgarian
 who whom sees
 'Who sees whom?'
- b. * **Kogo koj** vížda?
 whom who sees
- (5) a. **Kto kogo** zobaczył? Polish
 who whom saw
 'Who saw whom?'
- b. **Kogo kto** zobaczył?
 whom who saw

In this paper I develop an analysis that accounts for these differences, appealing to a multiple Spec analysis as proposed by Chomsky (1995), Ura (1995) and Koizumi (1995). A crucial innovation is the introduction of a functional projection (Op)erator Phrase, situated below CP. I argue that the major difference between Bulgarian and Polish-type languages lies in whether multiple Specs are induced in OpP or CP.

¹ The Bulgarian examples in this section come from Rudin (1988) unless otherwise indicated.

2 Attachment of Post Initial WH Phrases in Slavic

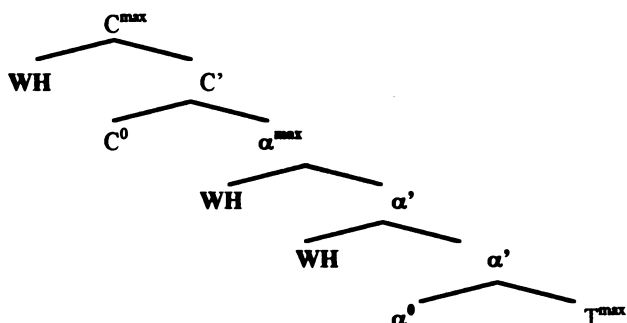
On the minimalist assumption that movement is forced by morphological feature checking, the differences between languages with overt *wh*-movement and *wh-in-situ* languages receive a straightforward account. Overt *wh*-movement in English-type languages is forced by the requirement of the complementizer *C* to have its strong *Q* feature checked.² Lack of overt movement in *wh-in-situ* languages, like Chinese or Japanese, is attributed to the weak status of their *Q* features.

While variation in the strength of *Q* features can account for the contrast between English and Chinese, it is not sufficient to account for the contrast between English and Polish or Bulgarian. In principle, the movement of one element to a specifier position should be enough to check strong features of the head. Once the strong feature of *C* is checked by a *wh*-phrase in its Spec, the head should not be able to attract any more phrases. As shown above, Slavic languages systematically violate this generalization.

The very direct solution that I will adopt here is that multiple fronting of *wh*-phrases in Slavic is attributed to the need of *wh*-phrases to check a feature other than a *Q* feature. In this respect, this proposal is similar to Bošković (1996) and (1997b), where he attributes multiple fronting in Slavic to the presence of a strong focus feature on *wh*-phrases. The crucial difference between Bošković's analysis and mine concerns the account of superiority in the two groups of Slavic languages. Bošković's account relies on the distinction between movement driven by *Attract* and movement driven by *Greed*. *Wh*-phrases can move either to satisfy the features of the target (*Attract*) or their own features (*Greed*), and violations of superiority arise only on the *Attract* schema.

On the analysis pursued here, post initial *wh*-phrases, instead of adjoining to IP, move to the specifier position of their own functional projection (6).

² I assume here that the interpretable *Q* feature has a formal component responsible for triggering overt movement.

(6) ATTACHMENT OF POST INITIAL WH-PHRASES³

The exact nature of the αP category posited here raises immediate questions; without any motivation for its existence this proposal amounts to little more than stipulation. In the next two sections, I show that the behavior of Slavic indefinite pronouns provides independent empirical support for the presence of an extra functional projection below CP.

2.1 *Slavic Indefinite Words*

Slavic indefinite words are morphologically related to *wh*-words. In this respect, Slavic languages pattern together with languages like Japanese, Korean and Chinese, where *wh*-words can function as indefinite pronouns when they are in the scope of an appropriate operator.⁴ Indefinite and negative pronouns in Slavic are built from *wh*-stems, as illustrated in (7) (examples from Townsend and Janda (1996), Comrie and Corbett (1996)).

³ I assume that features can escape erasure after being checked, subject to parametric variation. A feature that does NOT get erased can enter into multiple checking relations, resulting in a multiple Spec configuration. In the case at hand, the relevant features of α have to be able to enter into multiple checking relationships in order to force the movement of all *wh*-phrases to a clause initial position.

⁴ For details see Cheng (1991) and the references cited there.

(7)

POLISH

WH-PRONOUNS

kto *who*
co *what*
gdzie *where*
kiedy *when*

INDEFINITE PRONOUNS

kto-ś *somebody*
co-ś *something*
gdzie-ś *somewhere*
kiedy-ś *some time*

NEG PRONOUNS

ni-kt *nobody*
ni-c *nothing*
ni-gdzie *nowhere*
ni-gdy *never*

SERBO-CROATIAN⁵

WH-PRONOUNS

(t)ko *who*
sto/sta *what*
gd(j)e *where*
kada *when*

INDEFINITE PRONOUNS

ne-(t)ko *somebody*
ne-sto *something*
ne-gd(j)e *somewhere*
ne-kada *some time*

NEG PRONOUNS

ni-(t)ko *nobody*
ni-sta *nothing*
ni-gd(j)e *nowhere*
ni-kada *never*

CZECH

WH-PRONOUNS

kdo *who*
co *what*
kde *where*
kdy *when*

INDEFINITE PRONOUNS

kdo-si *somebody*
co-si *something*
kde-si *somewhere*
kdy-si *some time*

NEG PRONOUNS

ni-kdo *nobody*
ni-c *nothing*
ni-kde *nowhere*
ni-kdy *never*

BULGARIAN

WH-PRONOUNS

koj *who*
što *what*
kăde *where*
koga *when*

INDEFINITE PRONOUNS

nja-koj *somebody*
ne-što *something*
nja-kăde *somewhere*
nja-koga *some time*

NEG PRONOUNS

ni-koj *nobody*
ni-što *nothing*
ni-kăde *nowhere*
ni-koga *never*

⁵ As pointed out by the reviewer, in Serbo-Croatian *wh*-phrases themselves can function as indefinites:

- (i) Ima šta da kupi
 has what that buys
 ‘There is something for him to buy.’

Similar facts obtain in Polish.

Indefinite and negative pronouns in Slavic also exhibit similar syntactic behavior to *wh*-words, i.e. in an unmarked case they occur in a clause initial position, as shown in (8)-(10).

- (8) a. **Nikt nic nie** widział. Polish
 nobody nothing NEG saw
 'Nobody saw anything.'
- b. ?* **Nikt nie** widział **nic**.
 nobody NEG saw nothing
- (9) a. **Ktoś coś** zobaczył.
 somebody something saw
 'Somebody saw something.'
- b. ?* **Ktoś** zobaczył **coś**.
 somebody saw something
- (10) a. **Niśto ne** razbiram. (Rudin 1986:22) Bulgarian
 nothing NEG understand
 'I don't understand anything.'
- b. ? **Ne** razbiram **niśto**.
 NEG understand nothing

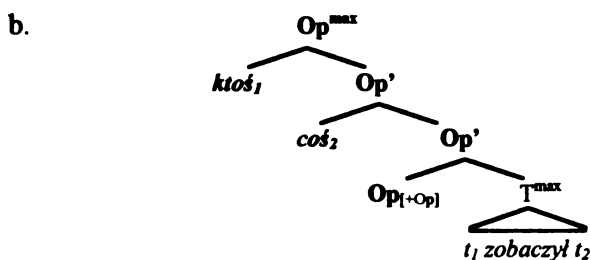
The judgments here are somewhat more complex. Some speakers accept indefinite pronouns *in situ*. Interestingly though, *in situ* indefinites have to be focused, which I take to indicate a D-linked interpretation in the sense of Pesetsky (1987).

2.2 Operator Phrase

I assume that the movement of indefinite pronouns to a clause initial position is forced by morphological feature checking, on the minimalist assumptions the only legitimate trigger for movement. Indefinites move to the specifier of a functional projection that I propose, *the Operator*

Phrase. This is illustrated in (11), where both the subject and the object move to [Spec, Op] to check strong Operator features.

- (11) a. **Ktoś** **coś** **zobaczył.**
 Somebody something saw
 ‘Somebody saw something.’

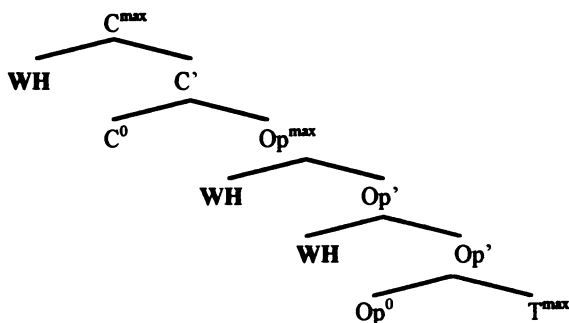


3 A Parametric Account of Variation in Multiple WH Fronting Languages

3.1 Position of WH Phrases

In multiple *wh*-questions, [Spec,Op] position provides an extra landing site for fronted *wh*-phrases. I have argued above that post initial *wh*-phrases in Polish-type languages, instead of adjoining to T^{max} (IP), move to the specifier position of their own functional category, which can now be identified as *the Operator Phrase*:

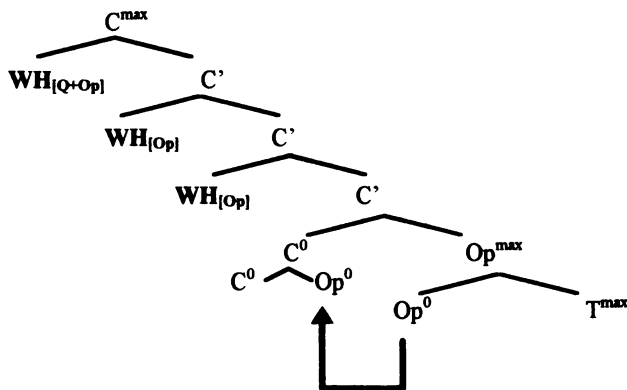
(12) ATTACHMENT OF WH-PHRASES IN POLISH MULTIPLE QUESTIONS



An important innovation here is the separation of the Operator features from the Q features. Crucially, *wh*-phrases have to check two kinds of features. This proposal reflects the intuitive idea, dating back at least to Klima (1964), that interrogative *wh*-phrases are composed of two elements, the *WH* element and the indefinite element. Thus *who*, for example, can be thought of as *WH* + *someone*, and *what* as *WH* + *something*.

The structure given in (12), even though adequate for Polish-type languages, has to be modified in order to account for the Bulgarian facts. Recall that in Bulgarian all fronted *wh*-phrases form a single constituent. I assume that Bulgarian is like Polish, in that only one *wh*-phrase raises to check the Q feature of the C head, and the remaining *wh*-phrases raise to check the Op features. The crucial parameter distinguishing Bulgarian from Polish is the presence of *overt Op to C raising*, as a result of which [Spec,Op] positions are not projected, and even the *wh*-phrases moving to check the Operator features end up in [Spec, C].

(13) ATTACHMENT OF WH-PHRASES IN BULGARIAN MULTIPLE QUESTIONS

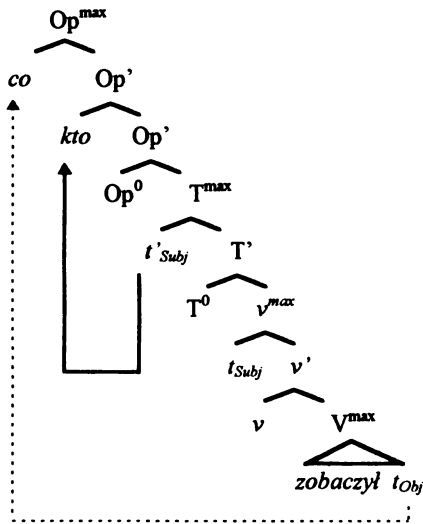


3.2 Superiority

The separation of the Operator features from the Q features creates a possibility to account for the contrast in superiority between Bulgarian

of *Attract*) and the lower *wh*-phrase moves next, landing in the outer [Spec,Op] position.⁷

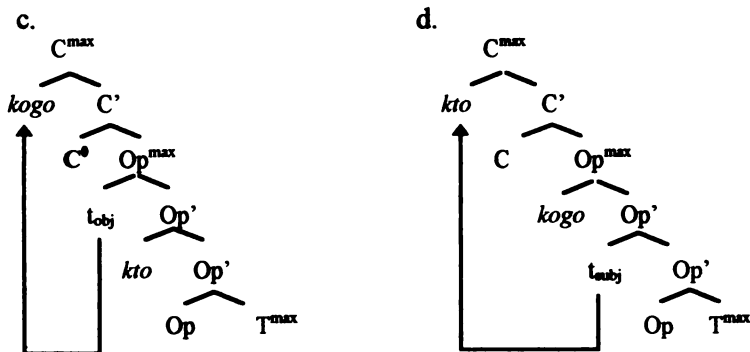
(16)



The second step in a derivation involves movement to [Spec,C]. Note that in (16) both the subject *kto* and the object *kogo* are in the same minimal domain, i.e. the domain of Op, which makes them equidistant from any higher attractor. Thus, either the subject or the object *wh*-phrase can move to [Spec, C], leaving the other *wh*-phrase in [Spec,Op]. The two derivations are shown in (17c) and (17d), respectively:

- (17) a. **Kogo kto zobaczył?** b. **Kto kogo zobaczył?**
 whom who saw who whom saw

⁷ I assume, contra Richards (1997), that movement to multiple Specs of a single head is cyclic, subject to the Extension Requirement of Chomsky (1993).

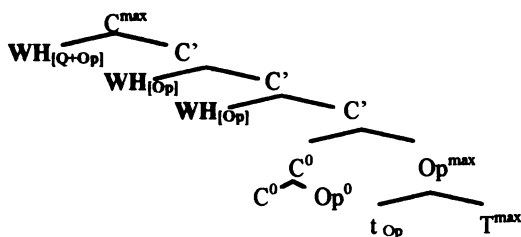


Still unaddressed at this point is the issue of why Bulgarian differs from Polish with respect to superiority. As shown in Section 1, Bulgarian imposes a strict ordering on fronted *wh*-phrases:

- (18) a. **Koj kogo vizda?**
 who whom sees
 'Who sees whom?'
 b. ***Kogo koj vizda?**
 whom who sees
 'Who sees whom?'

As a result of overt Op^0 to C^0 raising in Bulgarian, the C head with the Op head adjoined to it checks both the Op features and the Q features. Since there are no intermediate positions for *wh*-phrases to move through, they move directly to [Spec, C]. On the *Attract* schema, the highest *wh*-phrase in a clause is always the one that moves to check the Q feature, the remaining ones move to check the Op features:

(19) BULGARIAN MULTIPLE WH QUESTIONS



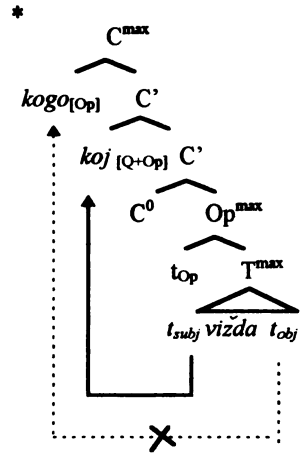
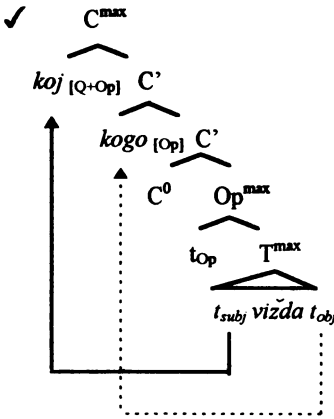
The crucial question that arises at this point is why the *wh*-phrases checking the *Op* features move to the inner [Spec,C] positions, in violation of the Extension Condition. Specifically, what favors the derivation given in (20c) over the one in (20d)? Note that only the derivation in (20c) yields a grammatical sentence. The descriptive generalization to be formalized shortly is that *the element having more features to check has to move to a higher position*. The two derivations are equal from the *Economy* theoretic point of view. However, on the derivation given in (20d) the object *wh*-phrase fails to undergo LF absorption, in the sense of Higginbotham and May (1981).

(20) a. **Koj kogo** vizda?
 who whom sees

b. * **Kogo koj** vizda?
 whom who sees

c.

d.



I assume here that absorption, which turns a string of unary operators into a single n-ary operator, is required for LF convergence.

(21) LF ABSORPTION
 $[Q_x Q_y \dots] \Rightarrow [Q_{\langle x,y,\dots \rangle}]$

At LF all the *wh*-phrases that have not checked the *Q* feature in overt syntax have to undergo absorption with a *wh*-phrase that has checked the *Q* feature overtly. Crucially, the *wh*-phrases undergoing LF absorption

have to be c-commanded by the ‘absorbing’ *wh*-phrase, in accord with the following condition (modified from Kitahara (1993)):^{8,9}

(22) CONDITION ON LF ABSORPTION

In LF, a wh-category X can undergo absorption with a wh-category Y if

- (i) *Q borne by Y is already checked in the overt syntax, and*
- (ii) *Y c-commands X.*

The condition on LF absorption straightforwardly rules out the derivation in (20d). The subject *koj*, being the *wh*-phrase whose *Q* feature has been checked in the overt syntax, fails to c-command the object *kogo*, which has to undergo LF absorption.

The account of superiority developed here raises questions concerning the ordering of non-argument *wh*-phrases. The prediction is that in binary questions the highest *wh*-phrase in a clause should always end up in the outermost specifier position. This might seem problematic in view of the data in (23). For speakers that report the contrast between (23a) and (23b), the prediction is borne out (dialect A). Many speakers, however, find the two sentences equally acceptable (dialect B).

- (23) a. **Kogo kǎde** ste videli? (Billings and Rudin 1996:42)
 whom where CL saw
 ‘Whom did you see where?’
- b. (*) **Kǎde kogo** ste videli?¹⁰
 where whom CL saw

Both patterns receive an explanation under current assumptions. As shown by Bošković (1997c), in Bulgarian the direct object *kogo* moves to

⁸ I assume here Reinhart’s (1976) original formulation of c-command, defined in terms of branching nodes.

⁹ This formulation slightly departs from Kitahara’s original formulation, given below:

In LF, a wh-category in situ X can undergo absorption with a wh-category Y if
 (i) *Q borne by Y is already checked in the overt syntax, and*
 (ii) *Y c-commands X.*

¹⁰ Brackets around the star indicate variation among speakers.

[Spec, Agr₀] in overt syntax, which makes it the closest element to be attracted by the C head.¹¹ This accounts for the pattern found in dialect A. What distinguishes dialect B from dialect A is the lack of overt object shift. The adverbial *kāde* and the object *kogo* thus remain within the same minimal domain, which makes them equidistant from any higher attractor.¹²

So far the discussion of superiority in Bulgarian has been limited to binary questions. Bošković (1997c) also notes that in ternary questions the order of post initial *wh*-phrases is free:

- (24) a. **Koj kogo kāde e vidjal?** (Bošković 1997c:239)
 who whom where is saw
 ‘Who saw whom where?’
- b. **Koj kāde kogo e vidjal?**
 who where whom is saw

For speakers of dialect B, this pattern comes as no surprise, since we find the same effects in binary questions (cf. the grammaticality of both (23a) and (23b) above). For speakers of dialect A, I take the acceptability of both (24a) and (24b) to follow from the Condition on LF Absorption given in (22), which parallels in spirit the account given by Bošković (1997c). The highest *wh*-phrase is the first one to be attracted by the C head. In this particular case it is the subject *koj*. Being the first element to move to [Spec,C], *koj* checks the *Q* feature of C. The remaining two *wh*-phrases *kogo* and *kāde* at LF have to undergo absorption with the *wh*-phrase that has checked the *Q* feature overtly. For absorption to occur, they have to be c-commanded by the absorbing *wh*-phrase (in accordance with the condition stated in (22)). Since neither of them has to c-command the other, they can end up in either order.

¹¹ The paper in question was circulated as a manuscript in 1993.

¹² Another possibility to account for the pattern in dialect B is to assume that object shift is optional.

4 Conclusion

To conclude, I have argued in this paper for the existence of an extra functional projection situated below CP, *the Operator Phrase*, which provides a landing site for post-initial *wh*-phrases in both Bulgarian and Polish-type languages.

The parametric variation between the two types reduces to the presence or absence of an overt Op to C raising rule. In Bulgarian Op raises to C overtly, resulting in a configuration where all fronted *wh*-phrases are in the Spec of one complex head. By contrast, in Polish fronted *wh*-phrases occupy the specifier positions of two distinct heads, due to the absence of overt Op to C raising. I have also shown that the contrast in superiority between the two groups can be deduced from independently motivated principles.

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D AS A SOURCE OF ADNOMINAL GENITIVE IN RUSSIAN

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1 Introduction

It has long been noticed (Veyrenc 1972, 1974, Padučeva 1984, Babby 1992, Rappaport 1992, among others) that Russian noun phrases can host two adnominal genitive phrases in certain cases (1a)-(3a), but disallow double adnominal genitive in others (1b)-(3b):

- (1) a. [konspekt [lekcii] [brata]]
summary lecture-*GEN* brother-*GEN*
'brother's summary of the lecture'
b. *[konspektirovanie [lekcii] [brata]]¹
summarizing lecture-*GEN* brother-*GEN*
'brother's summarizing the lecture'
- (2) a. analiz poëmy Puškina literaturoveda
analysis poem-*GEN* Puškin literary-critic-*GEN*
'a literary critic's analysis of Pushkin's poem'
b. *analizirovanie poëmy Puškina literaturoveda
analyzing poem-*GEN* Puškin literary-critic-*GEN*
'analyzing Pushkin's poem by a literary critic'

¹ (1b) is grammatical under the reading where *brat* 'brother' is the possessor of *lekcija* 'lecture' ([*konspekt [lekcii [brata]]*]). This reading is irrelevant for the purpose of the present discussion. The issue addressed here is the failure of *konspektirovanie* 'summarizing' to license two adnominal genitives in contrast to *konspekt* 'summary' in (1a).

- (3) a. *kollekcija redkix monet* *professora*
 collection rare coins-GEN professor-GEN
 ‘professor’s collection of rare coins’
- b. **kollekcionirovanie redkix monet* *professora*
 collecting rare coins-GEN professor-GEN
 ‘professor’s collecting rare coins’

Previous accounts of the phenomenon have all proceeded from the assumption that a nominal projection contains only one Case-licensing head—N (in particular see Rappaport 1992, Schoorlemmer 1995). Under the standard assumption that a given head licenses Case to a unique structural position, it follows that only one genitive phrase is available in a noun phrase. This prediction is, obviously, too strong, as indicated by the well-formedness of (1a). One possibility to circumvent the problem posed by (1a) is to treat all genitive phrases with the exception of one (say, the complement) as adjuncts. This is, in essence, the idea underlying Schoorlemmer’s (1995) analysis. A somewhat different solution to the problem is suggested by Babby (1992), who proposes to account for (1a) by postulating a recursive structural position for post-head genitive phrases. Both solutions seem to suffer from the same drawback: they allow for an unrestricted number of genitive phrases in a single noun phrase, which is unattested in Russian either (see section 2.1 for discussion of this point).

We propose an alternative analysis for the phenomenon in (1)-(3), which assumes a structural distinction between complements and subjects of noun phrases. The hypothesis advanced in the paper is outlined in (4):

(4) The genitive case of subjects in noun phrases is structurally licensed by D, whereas genitive complements are inherently Case-marked by the lexical head N.²

The hypothesis in (4) is bound up with a structural definition of subjects. We take the subject to be either a possessor phrase, merged as a specifier of the functional head D (in non-process nominals, such as *brata* in (1a)), or an argument of the lexical head, merged as a specifier of a lexical projection embedded under D (in process nominals, such as *lekcii* in (1b)).³ Apart from the obvious claim in (4) that noun phrases contain two Case-licensing heads, our hypothesis entails a distinction between Case-licensing mechanisms for subjects and complements in noun phrases. Thus, (4) correctly predicts the possibility of two adnominal genitive phrases in a single DP. In (1a) the genitive Case of the subject *brata* is structurally licensed by the functional head D in spec-head configuration; and the complement *lekcii* is inherently case-marked by the lexical head N. A detailed analysis of the distribution of subjects and complements in noun phrases is presented in section 2. The contrast between (1a) and (1b) with respect to the availability of two adnominal genitive phrases will be attributed to the status of (1b) as a process nominal. The latter will be argued to contain only one head licensing genitive Case in its projection. The syntax of process nominals in Russian and the availability of adnominal genitive in these nominals is discussed in section 3.

Further empirical support for (4) is provided by nominals lacking the DP-layer of projection. We show in section 4 that such

² We propose to consider D a licenser of subjects with the licensing mechanism being operative in LF due to the weakness of DP-features of D in Russian (see section 3.2).

³ See section 3.2 for discussion of the internal structure of process nominals.

nominals fail to host subjects of any type, as indeed predicted by our hypothesis.

The hypothesis in (4) has a number of advantages, also on conceptual grounds. First, it observes the principle of cross-categorical parallelism, stating that subjects are uniformly licensed by functional heads both in clauses and in noun phrases.⁴ By treating D as a functional head licensing subjects in noun phrases, our hypothesis ensures that the cross-categorical parallelism is preserved.

An additional conceptual advantage of (4) concerns cross-linguistic variation—it allows for the uniform treatment of subjects of noun phrases across languages. Subjects of nominal projections have been argued to be licensed by a functional head in a variety of languages (Abney 1987, Szabolcsi 1987, 1994, Ritter 1991, Valois 1991, Engelhardt 1997, among others). Such treatment of subjects gains particular weight within the theoretical framework of the Minimalist Program (Chomsky 1995), where parametrization is reduced to strength and weakness of features resident on functional heads rather than to the presence or absence of such features on a particular head.

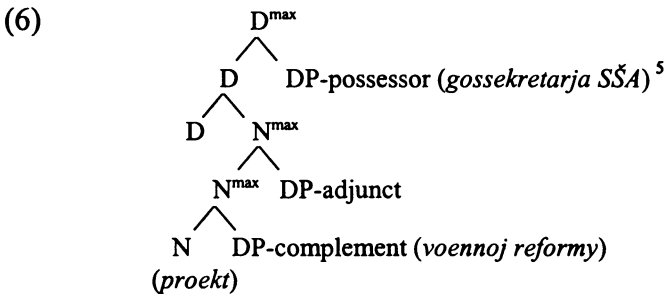
2 Adnominal genitive in non-process nominals.

As shown in the (a)-examples of (1)-(3), non-process nominals in Russian can host two adnominal genitive phrases. An additional example is given in (5):

- (5) proekt voennoj reformy gossekretarja SŠA
 project military reform-*GEN* state-secretary-*GEN* USA
 ‘the US Secretary of State’s project of a military reform’

⁴ For discussion of the parallelism between D and I (or C) see Szabolcsi 1984, 1987, 1994, Abney 1987, Siloni 1994, Bittner and Hale 1996.

These examples contain two genitive phrases, one of which is a subject and the other a complement. In accordance with (4), the genitive Case of the subjects *brata* in (1a), *literaturoveda* in (2a), *professora* in (3a), and *gossekretarja SŠA* in (5) is licensed by D, whereas the complements *lekcii* in (1a), *poèmy Puškina* in (2b), *redkix monet* in (3b), and *voennoj reformy* in (5) are inherently case-marked by the lexical head N. The structural representation of (5) is given in (6) below. The subject (possessor) occupies the Spec, DP position, and the complement is a sister of N.



Empirical evidence in support of the structure in (6) concerns the relative order of adnominal genitive phrases (possessive elements, adjuncts, and complements) within the noun phrase and their ability to appear as conjuncts of a coordinate structure.

2.1 *The ordering of adnominal genitive phrases.*

Post-head adjuncts in noun phrases tend to occur between the head noun and the subject (possessor).

⁵ We assume that the Spec, DP position in Russian is projected to the right (cf. Giorgi and Longobardi 1991 for a similar approach to possessors in Romance languages).

- (7) a. konspekt otlіčnogo oformlenija moego brata
summary excellent layout-*GEN* my-*GEN* brother-*GEN*
'my brother's summary of excellent layout'
b. *konspekt moego brata otlіčnogo oformlenija
summary my-*GEN* brother-*GEN* excellent layout-*GEN*
- (8) a. dorigaja skripka Stradivari našej solistki⁶
expensive violin Stradivarius-*GEN* our soloist-*GEN*
'our soloist's expensive violin by Stradivarius'
b. *dorigaja skripka našej solistki Stradivari
expensive violin our soloist-*GEN* Stradivarius-*GEN*

Under the assumption that adjuncts are adjoined to the maximal projection of the lexical head, NP, the subject (possessor) cannot originate as the specifier of the lexical head, which is lower than the adjoined position. By contrast, as predicted by the structure in (6), adjuncts cannot intervene between the head noun and its complement. Compare (9a) and (9b):

- (9) a. konspekt ego lekcii podrobnogo soderžanija
summary his lecture-*GEN* detailed content-*GEN*
'a detailed summary of his lecture'

⁶ We take genitive phrases denoting creators/designers to be adjuncts and not real possessors. The example in (8) clearly demonstrates this: such phrases allow for another genitive phrase denoting a real possessor—*našej solistki* ('our soloist'). On the other hand, the presence of two possessors renders the whole noun phrase ungrammatical, as illustrated by the example in (i):

- (i) *dorigaja skripka našej solistki moego soseda
expensive violin our soloist-*GEN* my neighbour-*GEN*
'our soloist's my neighbor's expensive violin'

- b. *konspekt podrobnogo sodržanija ego lekcii
 summary detailed content-GEN his lecture-GEN

Furthermore, the structure in (6) allows for the occurrence of three different types of posthead genitive phrases in the following linear order: complement >adjunct(s) >subject.

The analyses treating possessive elements as NP-adjuncts (Schoorlemmer 1995) do not preclude the occurrence of two genitive possessor phrases in the same noun phrase, which is ungrammatical in Russian (see (10a)). Nor does Russian permit occurrences of multiple genitive complements in noun phrases (see (10b)), which are predicted by the analyses allowing for a recursive genitive position (Babby 1992). These erroneous predictions stem from the lack of a structural distinction between subjects and complements within the noun phrase.

- (10) a. *konspekt moego brata moej sestry⁷
 summary my-GEN brother-GEN my-GEN sister-GEN
 ‘my brother’s my sister’s summary’
 b. *konspekt lekcii doklada
 summary lecture-GEN talk-GEN
 ‘summary of the lecture of the talk’

2.2 *Coordination*

Our claim that possessors are structurally distinct from adjuncts receives additional support from the ability of genitive phrases to be conjoined. It has been noticed that the conjuncts of a coordinate

⁷ The ungrammaticality of (10a) cannot be explained solely by recourse to the violation of the Theta Criterion or the Projection Principle, since the possessor element is not an argument of N (see Stowell 1991).

structure belong to the same syntactic category and perform the same grammatical and/or semantic function (Emonds 1976, Schachter 1977, Jackendoff 1977, Williams 1978, and Gazdar 1981). The proposal made here predicts the occurrences of conjoined adjuncts, complements or subjects in a noun phrase. This prediction is borne out, as illustrates (11):

- (11) a. konspekt moego brata i moej sestry
 summary my brother-*GEN* and my sister-*GEN*
 ‘my brother and my sister’s summary’
- b. konspekt lekcii i doklada
 summary lecture-*GEN* and talk-*GEN*
 ‘a summary of the lecture and of the talk’
- c. konspekt akkuratnogo oformlenija i razvernutogo
 summary neat layout-*GEN* and detailed
 soderžanija
 content-*GEN*
 ‘a neat summary of detailed content’

But we do not expect, nor do we find, conjoined structures with complement-subject, adjunct-complement or adjunct-subject clusters, as shown in (12):

- (12) a. *konspekt lekcii i razvernutogo soderžanija
 summary lecture-*GEN* and detailed-*GEN* content-*GEN*
 ‘summary of the lecture and of detailed content’
- b. *konspekt razvernutogo soderžanija i moego brata
 summary detailed content-*GEN* and my brother
 ‘the summary of detailed content and of my brother’
- c. *konspekt lekcii i moego brata
 summary lecture-*GEN* and my-*GEN* brother-*GEN*
 ‘the summary of the lecture and my brother’

The examples in (12) demonstrate that coordination of adjuncts and complements, (12a), or adjuncts and subjects, (12b), or complements and subjects, (12c), leads to ungrammaticality in spite of their morphologically homogeneous case-marking and post-nominal location.

To summarize this section, adnominal genitive phrases in Russian non-process nominals are subject to certain restrictions with respect to their relative order and number. These restrictions follow automatically from the structure suggested for these nominals in (6), whereby each type of genitive phrase is assigned a different position and has a distinct Case-licensing head.

3 Subjects in process nominals.

We now proceed to the discussion of process nominals. We show that their seemingly different behavior with respect to the distribution of adnominal genitive phrases is predicted by the hypothesis in (4).

3.1 *Process versus non-process nominals.*

Grimshaw (1990) observes that process nominals possess an array of properties that non-process nominals lack entirely. The core properties of process nominals are listed in (13):

- (13) - require the presence of their (internal) arguments
 - license aspectual adverbials
 - cooccur with a *by*-agent
 - host instrumental modifiers
 - cannot be pluralized

Borer (forthcoming) suggests that the distinct properties of process nominals can be accounted for under the hypothesis that these nominals contain a fully projected VP incorporated into a nominal head. In section 3.2 we show that this more articulated structure of process nominals plays an important role in the distribution of the adnominal genitive in Russian.

3.2 *Adnominal genitive in Russian process nominals.*

The distinction between process and non-process nominals is also exhibited by the Russian nominal system, as discussed in Schoorlemmer (1995) and Trugman and Engelhardt (1997). In this section we show that the distribution of adnominal genitive phrases in Russian depends crucially on the type of nominal in which they occur. Consider the examples in (3) repeated here as (14):

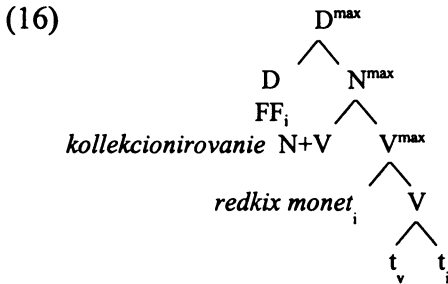
- (14) a. *kollekcija redkix monet* *professora*
 collection rare coins-*GEN* professor-*GEN*
 ‘professor’s collection of rare coins’
- b. **kollekcionirovanie redkix monet* *professora*
 collecting rare coins-*GEN* professor-*GEN*
 ‘professor’s collecting rare coins’

(14a) is a non-process nominal, and two adnominal genitive phrases are possible. By contrast, (14b) is a process nominal, and only one genitive phrase is possible. The question that arises instantly is what allows for two adnominal genitive phrases in non-process nominals but blocks this possibility in process nominals. We argue that this difference between the two types of nominals with respect to the number of available genitive phrases stems from the distinct structure of the two types of nominals, that is, from the presence versus absence of the verbal projection

embedded under N. Following Borer's (forthcoming) hypothesis for process nominals, we assume that these nominals contain a projection of V incorporated into the head noun, as shown in the diagram in (15).

$$(15) \left[{}_D^{\max} D \left[{}_N^{\max} N+V \left[{}_V^{\max} t_v \right] \right] \right]$$

Furthermore, Borer proposes to treat process nominals with genitive internal arguments as instances of passive. Under her analysis the genitive argument of a process nominal occupies the specifier position of the VP contained within the nominal projection. Hence, it is syntactically the subject. The structural representation of the process nominal in (14b) is given in (16):



In (16) the internal argument *redkix monet* of the verbal head *kollekcijirovat'* occupies the SPEC, VP as a result of passive formation prior to the incorporation of V-to-N. The raising of V to N is followed by a covert feature movement of the genitive subject to D.

3.2.1 Process nominals as passives. The evidence supporting the analysis of process nominals as passive forms concerns: (i) the availability of instrumental agents in process nominals and (ii) the failure of the incorporated verbal head to assign accusative Case to its internal argument under nominalization.

(i) In contrast to English, Russian disallows instrumental agents in nominals, as shown in (17).

(17) English:	Russian:
a. a book by Chomsky	*kniga Xomskim book Chomsky- <i>INSTR</i>
b. comments by experts	*kommentarii specialistami comments experts- <i>INSTR</i>

Instrumental agents in Russian are licensed in verbal passives, both reflexive and participial, and in passive participles exclusively. This is exemplified in (18).

(18) a. Lekcii konspektirujutsja Danej. lectures (are) summarized Danny- <i>INSTR</i> 'Lectures are summarized by Danny.'	
b. Lekcii zakonspektirovannye Danej ležat na stole. lectures summarized Danny- <i>INSTR</i> lie on table 'Lectures summarized by Danny are on the table.'	

The presence of an instrumental agent in process nominals, therefore, indicates the obligatory presence of a passive verbal projection (see Veyrenc 1972, 1974 for a similar proposal to associate a process nominal (a deverbal noun in his terminology) with a passive clause construction).

(ii) With respect to Case properties there exists complete parallelism between passive verbs failing to assign case to the internal argument and process nominals containing genitive internal arguments. On the assumption that passive verbs lack the ability to assign accusative case to their internal arguments (Burzio 1986) the ungrammaticality of (19b) follows straightforwardly.

- (19) a. *Studenty ob'javili zabastovku.*
 students declared strike-ACC
 'Students declared a strike.'
 b. **Bylo ob'javleno zabastovku.*⁸
 was declared strike-ACC
 'The strike was declared.' (intended reading)

In a similar fashion Russian verbs assigning structural accusative to their internal arguments do not preserve it under nominalization. Instead, the argument surfaces as an adnominal genitive, as demonstrated in (20):

- (20) *vyšivat' uzor* → *vyšivanie *uzor /uzora*
 embroider design → embroidering design-ACC/GEN

This lack of accusative case in process nominals follows automatically if the incorporated verbal form is assumed to be passive. On a par with internal arguments of passive clauses, which surface in the nominative, internal arguments of nominalizations containing a passive VP bear genitive Case-marking. In the following section we argue that both subjects undergo feature-checking in a similar way. Specifically, both have their Case licensed by a functional head (T or D respectively).

3.3 *D as a genitive Case-licenser*

Under the passive VP analysis of process nominals, the internal argument, since it is located in SPEC, VP, is a subject. The only

⁸ Examples like these, with the passive verb assigning accusative case to its internal argument, are possible in some Slavic languages and their dialects but are completely ungrammatical in Standard Russian (see Franks 1995 and references cited therein for a detailed discussion of the issue).

source for the licensing of the genitive Case in the domain of process nominals is D. Recall that under the hypothesis in (4), N can only provide an inherent case to the complement. But *uzora* in (20) is a specifier of the VP, not a complement, hence, cannot be inherently case-marked by N. Therefore, its genitive Case is licensed by the determiner—D.⁹

Thus, it follows that the difference between process and non-process nominals with respect to the availability of double genitive lies in the number of case-licensing heads within the nominal projection. In non-process nominals there are two Case-licensing heads—D and N. D is the source for the structural Case of subjects, whereas N is responsible for inherent case-marking of complements. In process nominals, however, there is only one head licensing genitive—D. Hence, only one genitive case is available and only one genitive argument is obtainable.

Our hypothesis gains further support from process nominals with inherently case-marked internal arguments. When the incorporated verb inherently case marks the internal argument, the external argument surfaces in the genitive, licensed by D, as illustrated below:

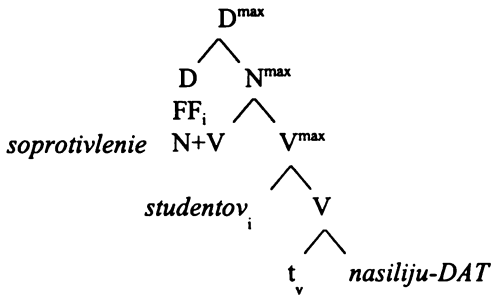
- (21) *soprotivlenie studentov/* **studentami* *nasiliju*
 resistance students-*GEN*/**INSTR* violence-*DAT*
 ‘students’ resistance to violence’

In (21), with the structure in (22) the process nominal *soprotivlenie* ‘resistance’ assigns inherent Dative to its complement *nasiliju* ‘violence’. As a result, the structural genitive remains available for the external argument of the incorporated

⁹ We assume that there are no intermediate functional projections in the noun phrase between NP and DP. However, the presence of an additional head would in no way invalidate our claim.

verb, which surfaces as an adnominal genitive *studentov*. In instances of inherent case-marking, the Case licensed by D is not discharged onto the internal argument, and so can be licensed to the external argument of the incorporated verb. Consequently, the subject located in SPEC, VP checks structural genitive against D, in accordance with the hypothesis in (4).

(22)



Previous analyses have assumed that both cases (genitive for the subject and inherent case for the complement) have the head noun as their source. This makes the head noun both an inherent and a structural Case-assigner at the same time, which is a dubious claim. The reason for the failure of these analyses to account for case distribution presented in (21) lies primarily in treating genitive-marked internal arguments of process nominals as complements of the head noun, rather than subjects of the incorporated verb. The fine structural distinction between inherent and structural case-assigners, N versus D, made in this paper allows to avoid such pitfalls. Identifying D as a unique structural Case-licenser in Russian DPs makes it possible to account for the diverse data in a simple and elegant way.

4 DP-less nominals

In Trugman and Engelhardt (1997) we argue that certain process nominals lack the DP-layer of projection. Such nominals appear in *tough*-constructions and nominal purpose adjuncts, as illustrated in (23):

- (23) a. *Takie temy_i ne interesny dlja obsuždenija e_i v klasse.*
 such topics not interesting for discussing in class
 ‘Such topics are not interesting for class discussion.’
 b. *Maksim prinex kartinki_i dlja raskrašivanija e_i.*
 Maksim brought pictures for coloring
 ‘Maksim brought pictures to color.’

The embedded nominals in *tough*-constructions, such as *obsuždenie* in (23a) and purpose adjuncts, such as *raskrašivanija* in (23b) were shown to contain a null complement controlled by an element outside the NP, as indicated by coindexing. Since these nominals have an internal argument position they fall within the category of process nominals discussed in section 3.

Now consider a process nominal derived from an inherent case-marking verb *podražat* ‘imitate’ in a *tough*-construction:

- (24) *Èta manera ispolnenija tjažela dlja podražanija*
 this manner performance difficult for imitating
 (**muzykanta*).
 (**pianist-GEN*).
 ‘This manner of performance is difficult for a pianist to imitate.’

Recall that in nominals with inherently case-marked complements genitive external arguments are normally available, as indicated by the well-formedness of (21). It was attributed to the availability of the genitive Case in a noun phrase, for the case is not discharged onto the internal argument. However, as (24) shows, the genitive subject is ungrammatical if such a nominal appears in a *tough*-construction. Since nominals occurring in *tough*-constructions and nominal purpose adjuncts are bare NPs¹⁰ they lack the case-licensing head for subjects, and, consequently, the ability to check structural genitive. As a result of this structural deficiency, genitive subjects are prohibited in DP-less nominals altogether, which is predicted by the hypothesis in (4). In other words, the lack of subjects in DP-less nominals provides additional support for our claim that D functions as a subject-licenser in Russian nominals.

6 Conclusion

We have argued in this paper for the existence of two distinct Case-licensing mechanisms in Russian nominals: (i) *inherent* case assigned by the lexical head (N) to the complement and (ii) *structural* Case licensed by the functional head (D) to the specifier (either the specifier of D or of a lexical projection embedded under D). It follows from our hypothesis that subjects are licensed by the functional head irrespective of whether they are possessors of non-process nominals or arguments of process nominals. In contrast, complements in a noun phrase are inherently case marked by the lexical head—N. By distinguishing between structural and inherent genitive Case-licensing mechanisms within Russian nominals, the present analysis succeeds in accounting for the

¹⁰ For a detailed analysis of the structure and behavior of such nominals see Trugman and Engelhardt (1997).

number and relative order of adnominal genitive phrases in three different types of noun phrases: non-process, process and DP-less nominals. If this analysis is on the right track, it also provides an empirical basis for the motivation of the DP hypothesis in Russian noun phrases.

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Parameters of Slavic Morphosyntax Revisited: A Minimalist Retrospective*

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1 Introduction

My goal in this paper is to go back to some of the problems treated in *Parameters of Slavic Morphosyntax (PSM)* and ask how well the solutions proposed there might fare under more current minimalist conceptions. The particular sets of problems I will address concern, first of all, the notorious problem of numeral phrases and the genitive of quantification and second the no less infamous problem of secondary predication and the case of PRO. I will point out inconconsistencies in the *PSM* analysis and suggest ways to reinterpret the relevant phenomena.

Before launching into the specific issues, I sketch out some aspects of minimalism that will be relevant to the subsequent discussion. In its broadest sense, minimalism means eliminating all machinery except what is absolutely required—in Chomsky’s phraseology—out of “virtual conceptual necessity”. So we take a knife to the theory, chopping away at anything extra, from superfluous moves in a derivation to nonessential theoretical constructs. As Lasnik points out, there are two distinct “minimalist” aspects of recent generative syntax. First, derivations and representations conform to an “economy” criterion demanding that they be minimal: no extra steps in derivations and no extra symbols in representations are allowed. Second, the theory itself has developed in the direction of minimality: streamlining, elegance and elimination of redundancy is sought everywhere. Specific reductionist proposals within the minimalist program include (i) reducing levels of representation to the two minimally necessary “interface levels” of Phonetic Form (PF) and Logical

* This paper has benefited greatly from fruitful interactions with numerous people. I am particularly grateful to the UConn linguistics community for hosting me during 1996-97, and to Howard Lasnik, Željko Bošković and their many excellent students for generous guidance, advice and support.

Form (LF); (ii) reducing X-bar theoretic relations to the primitives of specifier, head and complement; and (iii) reducing syntactic movement to the elementary operations of copy and delete. Movement itself is only driven by the need to check features, exclusively of the moved element under Greed, specifically of the target under Attract, or of either under Enlightened Self-Interest. These reductions and general economy considerations impose a clear theoretical imperative on the analyses I put forward in *PSM*, to which I now turn.

2 Quantifier Phrases Revisited

This section takes up the problem of numeral phrases and the genitive of quantification. I begin by sketching highlights of my earlier analysis, pointing out problems for minimalist assumptions as I go, and then explore alternatives that do not encounter these problems.

2.1 *The PSM Analysis*

Two chapters of *PSM* are devoted to Slavic numerals and related problems. In those two chapters I proposed several different “parameters” to take care of the differences observed among the languages. What I want to do is first review the two more salient ones, and then turn to one fairly obscure point of variation that I now believe should have been highlighted in *PSM* rather than swept under the rug. This is what I called the “accusative only” restriction in West Slavic. I will argue that properly understood, this restriction can be made to handle much of what the two parameters I originally emphasized were intended to cover.

2.1.1 *The Case Feature Parameter* A basic challenge is to account for what Babby (1987) terms the “heterogeneous vs. homogeneous” case pattern in Russian (RU) quantified noun phrases, and its selective absence in Serbian or Croatian (SC).¹ Considering RU first, the familiar problem is why the numerals *pjat’* and above assign genitive only in nominative and accusative contexts;

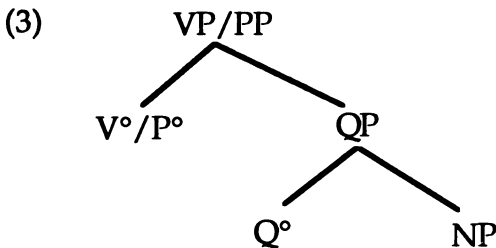
¹ By “quantified” I mean those containing Qs which assign genitive, that is, numerals with cardinality ‘five’ and above; ‘two’, ‘three’ and ‘four’ usually take nominative nouns and consequently induce the appropriate plural agreement.

following Jakobson, these are referred to as the “direct” or “nonoblique” cases. A simple pair is shown in (1) versus (2):

- (1) a. Maša kupila pjat' čajnikov.
Masha bought five teapots.gen
'Masha bought five teapots.'
- b. čerez pjat' dnej
 in five days.gen
 'in five days'
- (2) a. Ivan vladeet pjat'ju mašinami
Ivan owns five.inst cars.inst
'Ivan owns five cars.'
- b. s pjat'ju knigami
 with five.inst books.inst
 'with five books'

When verbs and prepositions that govern accusative in RU take numerically quantified complements, the material following the numeral is in the genitive, whereas when verbs and prepositions that govern particular oblique cases take quantified complements, the material following the numeral is in the appropriate oblique case. In other words, the quantified noun phrase displays “heterogeneous” case in (1) but “homogeneous” case in (2).

In *PSM* I handled this pattern by treating the genitive case assigned by the numeral as structural in RU. I equated lexical specification of a particular oblique case with GB’s inherent case. Thus, assuming inherent case to be assigned at D-structure but structural case to be assigned at S-structure, a structure as in (3) can receive two distinct resolutions.



If the verb or preposition assigns structural accusative, then NP surfaces with the genitive case required by the closer S-structure governor Q. If, on the other hand, the verb or preposition assigns some inherent case, then NP surfaces with the inherent case required by the verb or preposition at D-structure.

I compared this situation to that found in SC. In SC, abstracting away from various complexities, my conclusion was that in comparable situations the Q won out over the outside governor, as in the examples in (4) and (5) from *PSM*.

- (4) a. Kupili smo pet knjiga.
bought aux.1pl five books.gen
'We bought five books.'
- b. za osam dana
in eight days.gen
'in eight days'
- (5) a. Bojao sam se pet ljudi.
feared aux.1sg refl five people.gen
'I feared five people.'
- b. sa pet djevojaka
with five girls.gen
'with five girls'

This pattern was handled by assuming that, in contrast to RU, the genitive case assigned by the numeral in SC is inherent. Since it is inherent, it is assigned at D-structure. Combining this with the fact that Q is the closest case assigner to NP means that in SC it always has priority over any case assigned by V or P. In *PSM* the opposition between inherent and structural case was characterized in terms of the pseudo-Jakobsonian feature [\pm oblique], so what is going on could be stated as in (6).

- (6) a. Q assigns [$-$ oblique] "genitive" in Russian.
b. Q assigns [$+$ oblique] "genitive" in Serbo-Croatian.

The difference between the languages could thus be localized in the features of specific Qs, making it a lexical property.

An additional contrast this parameter was intended to handle concerns the form of modifiers such as demonstratives and quantifiers preceding the numeral. Compare RU (7) with SC (8).

- (7) a. èti pjat' devušek b. vse pjat' devušek
 these.nom five girls.gen all.nom five girls.gen
- (8) a. ovih pet devojaka b. svih pet devojaka
 these.gen five girls.gen all.gen five girls.gen

The idea was that the word before the numeral starts out after it but raises to outside the scope of the Q in the course of the derivation. If as in RU it moves before the Q assigns genitive, it will get the case appropriate to the entire NP, but if as in SC it moves after the Q assigns its case, it will have already been assigned genitive.

This was the basic GB analysis. It poses two obvious sorts of problems for minimalism. First, there is the technical issue of how the same insight could be instantiated in feature checking terms. This may ultimately be a matter of execution. Second, the account crucially relied on the postulation of D-structure vs. S-structure, and the association of these levels to different kinds of case-licensing. This is a much more fundamental stumbling block.

2.1.2 The Category Parameter I turn now to the second *PSM* parameter. In brief, RU exhibits two agreement possibilities with quantified subjects, as in (9).

- (9) Pjat' mašin pod"exalo/pod"exali k vokzalu.
 five cars.gen drove-up.n/drove-up.pl to station
 'Five cars drove up to the train station.'

One can either have neuter singular *pod"exalo* or plural *pod"exali*. Pesetsky (1982) argued that these two possibilities depended on whether *pjat' mašin* was a QP or an NP, respectively, proposing the competing structures in (10). I updated this basic idea to reflect more current mechanisms, as well as to address certain empirical deficiencies. The specific proposal required the structures in (11).

- (10) a.  b. 



The neuter obtains when the subject is a QP, the plural when it is a DP. As a DP the subject raises to [Spec, IP] for case and agreement purposes, hence the plural *pod"exali*, but as a QP it remains in [Spec, VP], and [Spec, IP] is either empty or filled by a null expletive, hence the neuter singular *pod"exalo*. The advantage of positing the extra DP structure in (11b) is that the relation between Q and NP remains constant, explaining why NP is genitive regardless of whether the entire thing is a QP or a DP.

Next I claimed that numeral phrases in SC were always maximally DPs, never QPs. As a "parameter" this is stated in (12).

- (12) a. N projects to QP or DP in Russian.
b. N must project to DP in Serbo-Croatian.

My main professed reason for wanting to do this was because in SC heterogeneous numeral phrases can appear in oblique case positions, as in the examples in (5). If DPs have case but QPs do not, then the conclusion that when in inherent case positions they must be DPs is inevitable. Notice that this alone does not mean that they cannot be QPs in structural case positions. I argued in *PSM* however that they were not, largely on the basis of the absence in SC of the neuter vs. plural dichotomy of RU (9). In SC the grammatical norm is to use neuter singular on the verb, with plural a somewhat marginal option, as in (13).

- (13) Dvadeset migova prešlo je/
twenty MIGs.gen crossed.nsg aux.3sg/
?prešli su granicu.
crossed.mpl aux.3pl border
'Twenty MIGs crossed the border.'

Significantly, none of the semantic or syntactic distinctions associated with selecting the singular or plural option familiar from

RU exist in SC. Taking the degraded possibility of plural in SC thus to reflect so-called “semantic” agreement, the problem still remains of why DP nominative quantified subjects do not induce plural agreement in SC as they do in RU. I suggested that the reason had to do with the way that ϕ -features percolate up the tree from the lexical heads which introduce them, such that in a structure such as (11b) the number-gender features of the head noun cannot percolate up to DP in SC because NP is genitive and DP is nominative. Consider the hypothesized structure (11b) more carefully from the perspective of the assignment system I was operating within. The noun is pulled out of the lexicon with ϕ -features. I assumed percolation takes place as soon as possible, so that as soon as a feature has a specified value that value percolates. NP is assigned genitive at D-structure in SC but not in RU, while in both languages DP will not be nominative until S-structure. I argued that in the SC version of (11b) the ϕ -features of N° percolate up the tree, reach NP, and can go no further, whereas in the RU version they continue up to DP. But what is the relevant difference? It cannot be because of some property of QP or DP, because these are presumably identical in the two languages. The only available distinction is that NP in SC but not RU is already genitive *at the time percolation must take place*. Exactly why this should be important, however, was never made explicit.

Under minimalist assumptions the problem is even more acute, first since N° will be drawn from the lexicon with genitive features in both languages and second because inherent and structural case cannot be distinguished through reference to levels.² One could

² There are also conceptual problems with positing (12) as a parameter. It looks more like matter of categorial selection than a lexical property, but it would be desirable to eliminate c-selection altogether. And simply stipulating (12) as a fact of life, as I did in *PSM*, is hardly satisfactory. The only reasonable alternatives are thus to reject (12) as the correct characterization of the data or to derive it from some more salient fact about the languages in question. While rejection might ultimately turn out to be correct, it would be putting aside not just the problem of competing agreement patterns in RU, but also the host of concomitant correlations to the QP/DP dichotomy, discussed in Pesetsky’s and Neidle’s 1982 MIT dissertations, such as binding of anaphors or control of infinitives,

conceivably follow the general scheme of Bošković (1997) and apply that reasoning to NPs, which would mean that no stipulation such as (12) could in principle be made. N would instead project to whatever was independently required. The trick is then to show that for some independent reason DP is required in SC but not in RU. What could be the relevant factor? In *PSM* I argued that (12a) held of East Slavic and (12b) held elsewhere. I now suggest that option (12b) actually correlates with the existence of pronominal clitics in a language. Notice that for the analysis to work what we really need is something bigger than a QP, not necessarily a DP. It seems to me that, on morphological grounds if nothing else, in the South and West Slavic languages the proper analysis of clitics should be as K° rather than as D° heads.³ Thus, perhaps the presence of argument clitics in SC is enough to tell the learner that N has to project to KP, so that a collocation like *pet djevojaka*, i.e. a Q plus a genitive N, must be analyzed as in (11b), although with KP rather than DP. RU *pjat' devušek*, on the other hand, can be analyzed either as (11a) or (11b).⁴

2.1.3 The Accusative Only Parameter I now introduce the third “parameter” for handling Slavic numeral phrases that was proposed in *PSM* and which I believe should have been more comprehensively exploited. A common syndrome of earlier analyses, and one from which my work also suffered, was the proliferation of “parameters” in tandem with the casting of a wider

gerunds and predicate adjectives, things which only DPs can do, or long-distance subject extraction, something only QPs can do. I therefore pursue the latter alternative.

³ In work on Slavic clitics in progress, I argue that they are K° elements, since they so closely resemble case endings, as opposed to say Romance, where they are clearly D° heads and thus resemble determiners. In clitic second Slavic languages pronominal clitics are generated in argument positions and move overtly to Agr° ; in Polish I think that they move as XPs; and in Bulgarian and Macedonian, following Rudin (1997), they are nonarguments and originate as K° s under Agr , with the arguments having become DPs in these two languages. Interestingly, clitic doubling is thus concomitant with the change from KP to DP status of the maximal extended projection of N, forcing reanalysis of the K° clitic as base-generated in Agr .

⁴ I will assume KP for South and West Slavic but refer in this paper to DP rather than KP in order to make the presentation more familiar.

empirical net. In this instance, I attempted to extend the analysis to Polish (PL) and encountered difficulties which required yet another mechanism to handle the variation. The problem I came up against was that PL numeral phrases display ostensibly mixed behavior. They exhibit the heterogeneous vs. homogeneous pattern of RU, as shown in (14) vs. (15), but verbs invariably require neuter singular “agreement” with numeral phrase subjects, as shown in (16).

- (14) a. Znam te pięć kobiet.
know.1sg these.acc five.acc women.gen
‘I know these five women.’
- b. przez te pięć kobiet
by these.acc five.acc women.gen
‘by these five women’
- (15) a. Opiekowałam się tymi pięcioma kobietami
cared.fem1sg refl these.inst five.inst women.inst
‘I took care of these five women.’
- b. o tych pięciu kobietach
about these.loc five.loc women.loc
‘about these five women’
- (16) a. Tych pięć nowych studentek
these.gen five.nom-acc new.gen female-students.gen
było obecnych.
was.n present.gen
‘These five new (female) students were present.’
- b. Te pięć nowych
these.nom-acc five.nom-acc new.gen
studentek było obecnych.
female-students.gen was.n present.gen
‘These five new (female) students were present.’
- c. Wszystkich pięciu studentów przyszło.
all.gen-gen/acc five.gen-acc students.gen arrived.n
‘All five students arrived.’

In the glosses in (16) I have indicated first the case which is usually ascribed to the form in question—either nominative or

genitive—and then after the hyphen the case I think it is—accusative.^{5, 6} The point here is that treating quantified subjects in PL as accusative is the only option that makes consistent sense and fits all the facts. Rothstein (1993) for example characterizes the form *te* in (16b) as nominative, but at the same time observes that the accompanying verb necessarily appears in the third singular neuter form, which is the non-agreeing form. This discrepancy should be quite disturbing, since elsewhere we have good reason to believe that nominative subjects and subject-verb agreement go hand-in-hand. Thus, if a RU subject has a nominative modifier, as in (7), it must be analyzed as a (nominative) DP rather than as a (caseless) QP, inducing obligatory subject-verb agreement. This is shown in (17), which should be compared to (9).

(17) Vse pjat' mašin *pod"exalo/pod"exali k vokzalu.
 all five cars.gen drove-up.n/ drove-up.pl to station
 'All five cars drove up to the train station.'

Since one never finds plural agreement with quantified subjects in PL, we do not want quantified subjects in PL ever to be nominative. So in *PSM* I simply stipulated that PL QPs only occur in accusative contexts, as in (18).

(18) QPs are only licensed in accusative DPs in Polish.

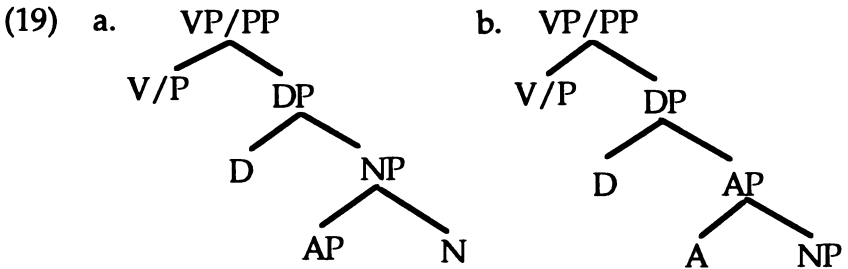
How does (18) interact with the other parameters to obtain the PL facts? Some reflection shows that (18) does most of the work by itself. First, it states the otherwise incomprehensible fact that the form of the number looks like it is nominative in non-virile (16a, b) *pięć* but genitive in virile (16c) *pięciu*. The only uniform way to treat this discrepancy is to say it is in fact accusative in both. Next, it handles the problem of subject-verb agreement

⁵ Except for *wszystkich* in (16c), which is typically genitive, parallel to (16a), although the accusative variant, parallel to (16b), cannot be excluded.

⁶ Note, incidentally, the genitive on the predicate adjective *obecnych*, even in (16b), which shows that in PL this agrees in case with the head of its antecedent, *studentek* being genitive plural even though the entire DP is accusative. This seems to be true of West Slavic in general, as is the "accusative only" restriction; perhaps therefore agreement with N^o is a consequence of the subject DP being accusative. Wayles Browne informs me that Slovenian also seems to pattern this way.

without any supplementary mechanisms: PL quantified subjects are always accusative but agreement only occurs with nominative subjects, so plural agreement is impossible.⁷

Consider next the heterogeneous vs. homogeneous pattern, for which the [\pm oblique] parameter in (6) was introduced. Postulating (18) makes the choice of whether Q assigns inherent case at D-structure or structural case at S-structure irrelevant to the distribution of QPs. The reason is because it prohibits QPs from appearing in inherent case positions, since the DP dominating it will not be accusative. The structure in (11b) is thus unavailable in oblique contexts in PL, so the alternative in which the numeral is adjectival and agrees rather than governs must be selected. This alternative presumably has a structure as in (19a) or (19b), depending on one's approach to adjective phrases.



In structural case contexts, on the other hand, (11b) is possible, in accordance with (18).

Notice here an interesting result: an accusative DP must be allowed to appear in any structural case position. That is, in addition to the obvious fact that it occurs in positions in which accusative is licensed, it has to be permitted in nominative positions as well. On the other hand, an accusative DP crucially cannot be tolerated in inherent case positions. Why might that be? The reason surely has to do with the intimate association between inherent case and theta-role assignment. Some specific inherent

⁷ Although for my purposes it suffices for this to have the status of an observation, it would be preferable to deduce the correlation between subject-verb agreement and nominative case from independent properties of how agreement is checked. Željko Bošković suggests that agreement might require case on the AgrS + T complex.

case is required on an argument in order for that argument to be assigned (or check) some specific theta-role. So deploying an accusative DP in a position where an inherent case is called for leads to a theta-theory violation and LF crash. In a nominative position, however, it seems that nothing in principle prevents the selection of an element with the wrong case, since nominative case is not theta-related. Accusative quantified subjects in PL thus slip by in nominative as well as accusative positions. In short, structural case contexts do not absolutely require the specific case they check. Note also that the derivation does not cancel, something Chomsky (1995) proposes for case mismatch. In fact, for PL I argued that the accusative quantified DP necessarily moves to subject position, although whether it does this to check nominative or EPP features is not clear. A similar phenomenon is often described for Icelandic, where inherent case marked objects must move to subject position but (unlike in RU) they still retain their inherent case. A simple example is provided in (20) from Freidin and Sprouse (1991): ‘help’ in (20a) assigns inherent dative and this is preserved under passivization, whereas ‘kill’ in (20b) assigns structural accusative and this is replaced by nominative.

- (20) a. Stráknum var hjálpað af bróður sínum
 the-boy.dat was helped by brother his
 ‘The boy was helped by his brother.’
- b. Haraldur var drepinn í gær.
 Harold.nom was killed yesterday
 ‘Harold was killed yesterday.’

Returning now to the issue of how (18) interacts with the other two parameters of *PSM*, it could be that the fact that quantified noun phrases always project to DP in PL may follow from my claim that all QPs in PL are in accusative DPs, since this presumably entails that they be in DPs in the first place. I reject this idea for the following three reasons: first, it relies on technical wordplay; second, we already have a good way to fix (12) with respect to KPs and DPs depending on the existence in the language of pronominal clitics or determiners; and third, when (18) is eventually generalized to the other Slavic languages, applying the same

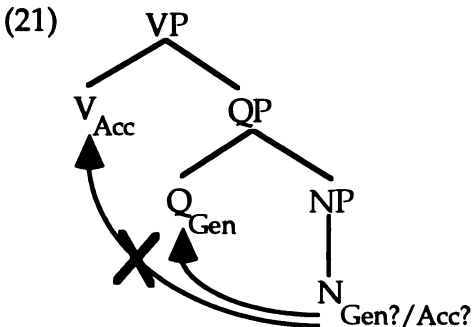
reasoning to RU would rule out bare QPs in that language too. What about the $[\pm\text{oblique}]$ parameter in (6)? Although I have just shown why, given (18), the $[\pm\text{oblique}]$ parameter is necessarily impotent with respect to the heterogeneous vs. homogeneous pattern, it does have one residual effect. This is the form of the demonstrative, which is normally genitive in PL, as in (16a), implying that Q checks $[\text{+oblique}]$ case, but can also be accusative, as in (16b), implying that Q can also check $[\text{-oblique}]$ case instead. Furthermore, other West Slavic languages, which all obey the “accusative only” restriction, display varied behavior with respect to the case of the demonstrative. I conclude that the accusative only restriction comes a long way to subsuming both other parameters but, even for PL, does not cover all their effects.

2.2 Some Minimalist Speculations

In this section I explore some minimalist alternatives to the PSM account of heterogeneous vs. homogeneous case assignment.

2.2.1 Juggling the Possibilities

Since checking demands that we select all elements from the lexicon complete with case features, and since without the D-structure/S-structure opposition no account even in terms of level of case-checking is conceivable, it seems to me that the contrasting patterns will have to reflect competing resolutions of the same numeration. Bošković, in fall 1996 UConn class lectures, offered some promising suggestions along these lines. To get an idea of the kind of effect economy considerations might have, let us return to the structure in (3) posited for RU and repeated with slight modification in (21).



Next, imagine—as we have all along—that both V and Q can check case. Then (21) potentially offers two possibilities: the formal features of N can move to Q, checking genitive, or they can move to V, checking accusative. But clearly movement from N to V is *not* the shortest move, since there is an intervening landing site that has been skipped over. N must thus be genitive and not accusative. In this way, Bošković suggested that heterogenous case assignment in RU is to be preferred, everything else being equal.

Before examining when everything else is *not* equal, it is worth taking note of several controversial aspects of Bošković's insight that shortest move can be exploited to obtain the Slavic genitive of quantification construction. The first point is that in order to compare derivations in which N is genitive or accusative these must count as the same numeration, contra assumptions in Chomsky (1995). If two different case forms of the same word counted as distinct lexical items, then derivations in which N in (21) was genitive or accusative could not be compared.⁸ A second point about (21) is that it assumes Move rather than Attract, since, whether the attractor is V or Q, from the perspective of the target N would be the closest element that can check its case features. A

⁸ Even if two structural case instantiations of the same lexical item are allowed to compete, this cannot be correct for inherent case. This is obvious since inherent case has semantic import. Examples are easy to construct; consider the famous textbook example of this from RU in (ia); prepositions that can govern different cases depending on meaning, as in (ib), and so on.

- | | | | |
|--------|--|----|---|
| (i) a. | pamjatnik Puškina/Puškinu
statue Puskin.gen/Pushkin.dat
'a statue of Pushkin'
'a monument to Pushkin' | b. | pod stol/stolom
under table.acc/table.inst
'(to) under the table'
'(at) under the table' |
|--------|--|----|---|

Maybe there is a way around this sort of problem, since even the exact same items can have different meanings depending on how they are put together, as in the approximative inversion construction in (ii).

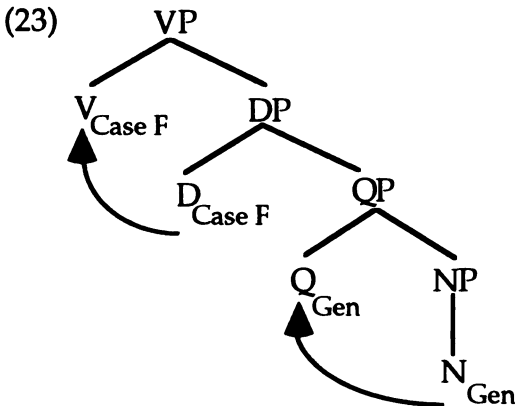
- | | | | |
|---------|---|----|---|
| (ii) a. | čerez pjat' časov
in five hours.gen
'in five hours' | b. | časov čerez pjat'
hours.gen in five
'in about five hours' |
|---------|---|----|---|

If this is a real difference with respect to the numeration, one way of formalizing it could be to backtrack from the strong checking hypothesis, and maintain that only inherent case is selected from the lexicon and checked, but that structural case is assigned.

final potential problem is that accusative on V and genitive on Q cannot both be checked by N in (21). Consequently, either the “inverse” case filter (the requirement that case checkers must check or “discharge” their case features) does not hold, as was implicit in my analysis of Polish subject QPs as accusative, or V is only optionally associated with accusative features; in an Agr system, it could be dominated by AgrOP or not. Notice, however, that even verbs that are obligatorily transitive, such as *s’est*, can take heterogeneous quantified objects, as in (22).

- (22) Ivan s’el pjat jablok.
 Ivan ate-up five apples.gen
 ‘Ivan ate up five apples.’

However, it is perfectly possible that all this means is (22) cannot involve a bare QP complement, but must rather take a full DP, as in (23), which I have generalized to represent the possibility of V checking inherent case as well.



A DP as in (23) is actually the anticipated option, assuming any reasonable implementation of Canonical Structural Realization. What is at stake in (12) is the issue of when (21) is also an option.

When is everything else not equal with respect to (21) vs. other conceivable structures? By Bošković’s reasoning, (21) should always be the most economical, since no other structure could offer a shorter move. What we need to obtain the homogenous case pattern is for (21) to crash. The obvious way to implement this is to

say that (21) crashes in inherent case conflicts due to a theta-theory violation: V cannot check (or discharge) its theta-role since there is no appropriately case-marked argument. This properly limits (21) in RU to structural case contexts. So what happens instead? Is (23) a viable alternative in inherent case positions as well?

Here matters become more complex, since the answer to this question seems to be “Conceptually ‘yes’, but empirically ‘no’.” First of all, (23) is perfectly viable in nominative and accusative positions. Consider what happens when the quantified nominative subject or accusative object is a DP. The genitive N has its formal features checked against Q, and the nominative or accusative D has its formal features checked against whatever one believes checks these. Notice that the DP and bare QP options both involve only shortest moves, although there is one more step with DP since there is an extra feature to be checked, but these are different numerations (one with D, the other without). Should we then prevent (23) in oblique positions in principle? I think not. The reason is because this is precisely what is needed to accommodate SC. Recall that what happens in this language is that heterogeneous numeral phrases can appear in inherent case positions. Thus, so long as nothing else goes wrong, I see nothing that would prevent making use of exactly the analysis in (23) to handle this phenomenon in SC. Consequently, we will need some other mechanism to block (23) in RU when D is oblique.

I will return to what that mechanism might be after examining the structure of the homogeneous case construction, as in RU (2) or PL (15). If these numerals are adjectival, then they presumably have whatever structure one posits in general for introducing APs, something either like (19a) or (19b). Since I would prefer the numerals to be part of a single paradigm regardless of their case and since I would like to capitalize on the parallelism between the Q-NP and A-NP structures, I will assume the Abney-type representation (19b) over (19a). Thus, whether the numeral surfaces as a pure Q or as an A is relatively superficial. At this point one could go in one of two directions in explaining why the adjectival option is not invoked in structural case contexts. One could, as Bošković did in his class lectures, try to develop a story whereby movement

of formal features of N is more costly when the numeral ends up agreeing in case, hence adjectival, rather than checking case itself. My tentative way of accomplishing this is as follows: movement of N directly to D—that is, over Q, causing Q to surface as adjectival—would violate shortest move. The other tack one could take is a more lexicalist one. Following ideas due to Neidle (1982/1988), it could simply be that there are two lexical items for something like RU *pjat'*, one a Q and the other an A, and the A happens to lack nominative and accusative forms. When the adjective is a numeral, (19) would thus be impossible in structural case contexts by virtue of its lexical deficiency. Notice that, even if we do not adopt this approach in general, it still seems inevitable. For one thing, even in RU there are closely related adjectival and quantifier forms, such as *mnogo* vs. *mnogie*, as in (24).

- (24) a. *Mnogo studentov sdali/sdalo èkzamen.*
 many students.gen passed.pl/passed.n exam
 'Many students passed the exam.'
- b. *Mnogie studenty sdali/*sdalo èkzamen.*
 many.nom students.nom passed.pl/passed.n exam
 'Many (of the) students passed the exam.'

So the fact that *pjat'* is not similar is to some extent accidental, a lexical gap. Next, in other Slavic languages some numerals do have agreeing nominative-accusative forms, as in PL (25), from Rothstein (1993), or SC (26), supplied by Danijela Stojanović.

- (25) a. *Te dva duže konie są moje.*
 these.nom two.nom big.nom horses.nom are mine
 'These two big horses are mine.'
- b. *Ci dwaj nowi studenci*
 these.nom two.nom new.nom students.nom
byli obecni.
 were.vir present.nom
 'These two new students were present.'
- (26) a. *Dva mladića su došla/*je došlo.*
 two.m youths.??? aux.3pl came.???/aux.3sg came.nsg
 'Two youths came.'

- b. Dve devojke su došle/*je došlo.
two.f girls.??? aux.3pl came.fpl/aux.3sg came.nsg
'Two girls came.'
- c. Dva deteta su došla/*je došlo.
two children.??? aux.3pl came.npl/aux.3sg came.nsg
'Two children came.'

Since the verb agrees with these subjects they must be nominative. In PL (25a, b) all forms are appropriately virile or nonvirile, respectively. I take the forms in SC (26) indicated by "???" to be paucal in number, but crucially still nominative.⁹

2.2.2 Extending the "Accusative-Only" Restriction I return now to the mechanism that blocks (23) when D is oblique in RU, even though it is perfectly fine in SC. Recall that the need is to exclude (23) whenever "Case F" is anything but nominative or accusative. Now notice that this will also have to be done for PL, except that (23) must be blocked when D is nominative as well, since the only place QPs occur in that language is inside accusative DPs. The solution at this point should be obvious: something like (18) is

⁹ (26) raises an additional and potentially serious problem that deserves comment. If the paucal numerals are nominative and are necessarily part of nominative KPs, as they must be for subject-verb agreement not only to obtain but even be required in (26), then paucal numeral phrases should not be able to appear in inherent case positions. But they clearly do, as in the following examples:

- | | | |
|------------------------|--------------------|---------------------|
| (i) od četiri zemlje | (ii) na oba ova | kontinenta |
| from four country.pauc | on both these.pauc | continent.pauc |
| (iii) između dva zla | (iv) u toku tri | poslednje godine |
| between two evils.pauc | in course three | last.pauc year.pauc |

How can this puzzling behavior be explained? The problem is that the paucal numerals are more adjectival than the higher numerals and, as Corbett (1978) observed, have much more mixed properties. I make the null hypothesis that they are essentially like other numerals and appear in a structure along the lines of (23). D (or "K", in the case of SC) has its case features checked against the appropriate external head, and N has its checked against the numeral. The special thing is that the paucal numerals check a nominative-accusative form rather than genitive as the higher numerals do. For this reason, there is no case conflict and ϕ -features can percolate all the way up to to KP, which is why paucal number subject-verb agreement obtains in (26). In inherent case context there is a conflict, but it is irrelevant, since all this means is that (23) pertains equally to all Qs.

required anyway for PL, and this rules out (23) whenever Case F is not accusative by fiat. So all one has to do for RU is let nominative in, and then the two languages should be identical in the relevant respect. Now if we ask how this restriction should be extended to SC, the answer is simply that it must be relaxed to more or less let all cases in. The resulting extension of (18) to these other languages is sketched out in (27).

- (27) a. QPs are only licensed in **accusative** DPs in Polish.
 b. QPs are only licensed in **accusative and nominative** DPs in Russian.
 c. QPs only licensed in **all case** DPs in Serbo-Croatian.

The pattern in (27) is a very interesting one which I believe should be explored in depth. Here I can only scratch the surface of its ramifications. For one thing, it recapitulates the case feature system developed in *PSM*, according to which accusative is the least marked case, having a “minus” value for all case features; next comes the set of structural cases accusative and nominative as [-oblique]. So (27) could be restated as in (28).

- (28) a. QPs are only licensed in **minus value on all case features** DPs in PL.
 b. QPs are only licensed in **minus value on nonoblique feature** DPs in Russian.
 c. QPs are licensed in **no case feature restriction** DPs in Serbo-Croatian.

Another way to look at (27) is that it progresses from the most restrictive to the least restrictive distribution of QPs. This suggests to me a subset principle kind of arrangement, and if correct, implies an acquisitional and perhaps diachronic hierarchy that allows the gradual spread of heterogenous numeral phrases.

There are two final issues I want to raise about my proposed extension of the accusative only restriction to all Slavic numeral systems. The first concerns the “residue” of the [\pm oblique] parameter that determined the form of the modifiers in RU (7) vs. SC (8), repeated as (29) and (30).

- (29) a. èti pjat' devušek b. vse pjat' devušek
 these.nom five girls.gen all.nom five girls.gen
- (30) a. ovih pet devojaka b. svih pet devojaka
 these.gen five girls.gen all.gen five girls.gen

Can we get rid of the [\pm oblique] parameter in (6)? I think not, nor do I think it would be desirable. What this parameter states is that whether the case checked by Q is structural or inherent is a matter of lexical variation. So it has the right kind of general property, and is I think expected given that the genitive of quantification, being associated with scope of quantifiers, is neither theta-related, like inherent case, nor completely divorced from interpretation, like structural case. Moreover, as discussed by Lindseth (1993) and *PSM*, although all of West Slavic patterns like PL with respect to (28a), there exists considerable independent variation with respect to the choice of [\pm oblique]. If so, the question is then how the structural vs. inherent status of the case checked by Q maps onto the opposition in (29) vs. (30) without reference to level of case assignment. I suggest that the proper analogy is to the Icelandic passive paradigm in (20). As in *PSM*, these modifiers start inside QP and raise. In this respect they are just like objects of passive verbs in Icelandic which raise to outside VP: in both instances, when the original position is an inherent case position that case is retained, but when it is a structural case position the moved element has the case appropriate to its target position. Also possibly relevant, as Željko Bošković notes, may be the fact that RU does not preserve inherent case under passivization, whereas SC does.

One last issue concerns the fact that (28c) is not quite a correct characterization of the distribution of QPs in SC in that there seem to be other factors that inhibit its full application. The data are complex and in some flux, but if the situations in which QPs actually occur are probed, one finds that not all inherent case environments are equally felicitous. The examples in (5) illustrated a verb that takes genitive and a preposition that takes instrumental. These environments always allow QPs. Additional similar examples of verbs taking genitive and prepositions taking instrumental are given in (31) and (32).

- (31) a. Čuvao sam se pet ljudi.
 guarded aux.1sg refl five people.gen
 'I guarded myself against five people.'
 b. Domogao sam se pet knjiga.
 obtained aux.1sg refl five books.gen
 'I obtained five books.'

- (32) a. pod pet stolova b. nad pet stolova
 under five tables.gen over five tables.gen

Genitive is in fact acceptable in all contexts; (33) offers a preposition governing genitive and an adnominal genitive QP.

- (33) a. od pet gradova
 from five cities.gen
 b. vlasnik pet malih kuća
 owner five small.gen houses.gen
 'the owner of five small houses'

Putting QPs in dative contexts, on the other hand, is generally not felicitous in SC, although there is quite a bit of variation. Some speakers find QPs after prepositions acceptable but after verbs degraded, while others find both unacceptable. Relevant dative examples with two sets of judgments are given in (34).

- (34) a. */??Jovan je pomogao pet ljudi.
 Jovan aux.3sg helped five people.gen
 'Jovan helped five people.'
 b. */√Jovan je trčao prema pet ljudi.
 Jovan aux.3sg ran towards five people.gen
 'Jovan ran towards five people.'

Although space limitations preclude presentation of appropriate examples, careful consideration of other instrumental contexts—in particular, verbs that require instrumental complements and bare (adjunct) instrumentals—strongly suggests that QPs never really appear inside instrumental KPs in SC. If so, the “all case” tolerance of (28c) should be slightly amended, at least to exclude instrumental, and possibly also (some instances of) dative. Notice, however, that this adjustment to (28) is in perfect harmony with the

PSM case feature system developed for RU, since it analyzes genitive as the least marked oblique case, instrumental as the most marked case, and dative as slightly less.

3 Secondary predication revisited

I now turn to the second area of inquiry and ask what minimalist adjustments might be required to the *PSM* analysis of secondary predication. The basic problem is also described in Babby (this volume) and treated in detail in Babby and Franks (in press). My primary goal here is to suggest an alternative account more consistent with standard minimalist assumptions. This problem has to do with getting the right distribution of the second dative on semipredicative forms like RU *samomu*. In subject control contexts agreement obtains, as in (35). I refer to this phenomenon descriptively as “case transmission”.

- (35) a. Ivan xočet [PRO pojti na večerinku sam].
 Ivan.nom wants to-go to party alone.nom
 ‘Ivan wants to go to the party alone.’
- b. Ljuba priexala [PRO pokupat’ maslo sama].
 Lyuba.nom came to-buy butter alone.nom
 ‘Lyuba came to buy the butter herself.’

In contexts of non-subject control, arbitrary control, or whenever there is overt material in COMP (either in C° or [Spec, CP]), the dative appears. Some examples cited in *PSM* are given in (36).

- (36) a. Maša ugovorila Vanju
 Masha persuaded Vanya.acc
 [PRO prigotovit’ obed odnomu].
 to-cook lunch alone.dat
 ‘Masha persuaded Vanya to cook lunch by himself.’
- b. Dlja nas utomitel’no [PRO delat’ èto samim].
 for us exhausting to-do this alone.dat
 ‘It’s exhausting for us to this on our own.’
- c. Nevozmožno [PRO perejti ètot most samomu].
 impossible to-cross this bridge alone.dat
 ‘It is impossible to cross this bridge by oneself.’

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3 Secondary Predication Revisited

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 Lyuba.nom came to-buy butter alone.nom
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- c. Nevozmožno [PRO perejti ètot most **samomu**].
 impossible to-cross this bridge alone.dat
 ‘It is impossible to cross this bridge by oneself.’

- d. Ljuba priexala [čtoby
 Lyuba.nom came in-order
 [PRO pokupat' maslo samoj].
 to-buy butter alone.dat
 'Lyuba came in order to buy the butter herself.'
- e. Ivan ne znaet [kak
 Ivan not knows how
 [PRO tuda dobrat'sja odnomu]].
 there to-reach alone.dat
 'Ivan doesn't know how to get there by himself.'

The traditional insight about the second dative, due to Comrie (1974), was that the second dative arises through agreement with a dative subject subsequently deleted under Equi. In *PSM*, however, I jettisoned this insight. I did not want PRO to have case when it could not be overt, under the assumption that being assigned case before S-structure was what made something overt. (I had a theory of null subjects which said they received case at LF.) I was however troubled by the fact that if *samomu* is dative by virtue of agreement with PRO, and if *samomu* is overt, then PRO too should be assigned case before S-structure. Since PRO cannot be overt, I had to devise a special mechanism for assigning dative to the semipredicative directly whenever it failed to agree with its overt antecedent. Checking theory now resolves this dilemma: the semipredicative can be dative regardless of where in the derivation that case is in fact checked. Moreover, PRO can have a "null case" which will resemble dative for purposes of access by the semipredicative but which will not suffice for PRO itself to be overt.

The clinching argument that the PRO subject of infinitives has null dative case comes from a fact recently unearthed by Leonard Babby about contrastive *samomu* in gerundive phrases. Crucial examples are given in (37c) and (38c).

- (37) a. Ja vse videl,
 I.nom everything saw
 [sam/*samomu ostavajas' nezamečennym].
 self.nom/self.dat remaining unseen.inst
 'I saw everything, myself remaining unseen.'

- b. Ja staralsja [PRO vse videt',
I.nom tried everything to-see
[sam/*samomu ostavajas' nezamečennym]].
self.nom/self.dat remaining unseen.inst
'I tried to see everything, myself remaining unseen.'
- c. Ščel' v doskax dala mne možnost'
crack in boards gave me opportunity
[PRO vse videt',
everything to-see
[*sam/samomu ostavajas' nezamečennym]].
self.nom/self.dat remaining unseen.inst
'The crack in the boards gave me the opportunity to see
everything, myself remaining unseen.'
- (38) a. Ivan žil v dovol'stve, [sam/*samomu
Ivan.nom lived in contentment self.nom/self.dat
ne trevožas' o trude bednyx].
not troubling about burden poor.gen
'Ivan lived in contentment, he himself untroubled by the
plight of the poor.'
- b. Ivan xotel [PRO žit' v dovol'stve, [sam/
Ivan.nom wanted to-live in contentment self.nom/
*samomu ne trevožas' o trude bednyx]].
self.dat not troubling about burden poor.gen
'Ivan wanted to live in contentment, himself untroubled
by the plight of the poor.'
- c. [PRO žit' v dovol'stve, [*sam/samomu ne
to-live in contentment self.nom/self.dat not
trevožas' o trude bednyx]] — užasno.
troubling about burden poor.gen awful
'To live in contentment, oneself untroubled by the plight
of the poor, is awful.'

Contrastive *sam* agrees with the subject of its clause, as in the (a) examples, or with the controller of that subject, as in the (b) examples. Babby's generalization is about the (c) examples, which show that contrastive *samomu* only appears on gerundive phrases

inside infinitival clauses with dative PRO subjects, i.e., non-obligatory control ones. His ingenious and disarmingly simple solution to the problem of why they do not appear elsewhere is that the PRO subject of infinitives is always dative in RU, but under obligatory control there is no PRO, just a bare VP.

I now want briefly to sketch out an alternative account more in keeping with current minimalist mechanisms. Icelandic provides compelling evidence for a PRO subject even in obligatory control situations. Alongside retention of quirky case under passivization, as in (20), Icelandic has quirky case active subjects. Note now that the case of a floated quantifier agrees with what the subject *would be* if it were overt (in a finite clause), rather than PRO. Examples from Sigurðsson (1991) are given in (39), with the potential case of an overt subject of these verbs indicated by subscripts on PRO.

- (39) a. Strákarnir vonast til [að PRO_{nom} komast
the-boys.nom hope for to get
allir í skóla].
all.nom to school
'The boys all hope to get to school.'
- b. Strákarnir vonast til [að PRO_{acc} vanta
the-boys.nom hope for to lack
ekki **alla** í skólann].
not all.acc in school
'The boys all hope not to be absent from school.'
- c. Strákarnir vonast til [að PRO_{dat} leiðast
the-boys.nom hope for to bore
ekki **öllum** í skóla].
not all.dat in school
'The boys all hope not to be bored in school.'
- d. Strákarnir vonast til [að PRO_{gen} verða
the-boys.nom hope for to be
allra getiða í ræðunni].
all.gen mentioned in the-speech
'The boys all hope to be mentioned in the speech.'

Observe also optionality for simple predicate adjectives, as in (40).

- (40) a. Maria skipaði honum [að PRO_{nom} vera
 Maria ordered him.dat to be
 goðum/goður/*goðan].
 good.dat/good.nom/good.acc
 'Maria ordered him to be good.'
- b. Maria badði hann [að PRO_{nom} vera
 Maria asked him.acc to be
 *goðum/goður/goðan].
 good.dat/good.nom/good.acc
 'Maria asked him to be good.'

The predicate adjective either appears in the nominative, like an overt subject, or agrees with PRO's controller. These data suggest that we want PRO to always be present and necessarily have null case, and that null case is always some silent version of a full case in the system, but that we are going to need different mechanisms for checking it. To obtain the dative in (40a) or the accusative in (40b), I would say that PRO can either have the null case be nominative or the null case of its controller.¹⁰ This way, predicate adjective agreement is always clause internal, and somehow in Icelandic (40) it is equally possible for PRO to check null case appropriate to its own clause or to check it against its controller.¹¹

¹⁰ I envision checking null case against the controller as a movement operation. Whether overt or covert, this movement presumably only involves formal features, since PRO lacks phonological content. It may be similar to what Martin (1996) proposes, where PRO cliticizes to the matrix T in a "collapsed chain" and checks its case, except that I would have PRO check its case against a higher Agr, which need not be limited to AgrS.

¹¹ According to Babby (this volume), accusative *odnogo* may also be an option in examples such as (36a) for some RU speakers. His example is the following:

- (i) Ona poprosila ego ne ezdit' tuda odnogo/odnomu
 she asked him.acc not to-go there alone.acc/alone.dat

Speakers I have consulted however do not accept the accusative, and it may be that when this is accepted, it is being analyzed with the adjective floated off of the matrix object, i.e. *ego odnogo* 'him alone'. Nonetheless, if (i) is a correct characterization of some registers of colloquial RU, then it would appear to resemble Icelandic. And if both options do not exist, the question of course remains of why RU is different from Icelandic.

Returning to Slavic, the simplest assumption thus seems to me to be that when PRO appears to “transmit” case from its controller, PRO’s formal features must actually be raising to that controller to check null case; cf. fn. 10. It then must be that in second dative constructions PRO gets case checked internal to its clause, whereas in case transmission constructions it checks its null case in the matrix clause. In principle, PRO is thus like any other nominal in that, following Chomsky (1995:237), case features are arbitrarily added when it is selected for the numeration, and if the wrong option is chosen, the derivation crashes (or “cancels”). This account, which strikes me as the “null” hypothesis, raises many serious theoretical issues and opens up interesting possibilities for different null case PROs in RU and across languages. Here, unfortunately, I only have space to touch on one of these.

PSM was about correlations. I therefore conclude with a new and highly suggestive correlation that seems to support the null case analysis. In RU, modulo fn. 11, case transmission fails from object controllers, as we saw in (36a). PL is similar, but not all Slavic languages are like this. In particular, in Czech, Slovak and Slovenian object controllers of PRO also induce case transmission, as in Czech (41a) or Slovak (41b), from Comrie (1974), or Slovenian (41c, d), supplied by Marta Pirnat-Greenberg.¹²

- (41) a. Donutil jsem ho [PRO_{acc} přijít
 forced aux.1sg him.acc to-come
samotného/*samotnému.
 alone.acc/alone.dat
 ‘I forced him to come alone.’
- b. Necháva ju [PRO_{acc} starat’ sa o domácnosť **samu**].
 leaves her.acc to-look-after housework alone.acc
 ‘He leaves her to look after the housework herself.’

¹² Dative is unacceptable throughout. Note that, like Icelandic, these Slavic facts might pose a problem for the bare VP vertical binding account of Babby (this volume). His model requires that there be no PRO in the object control examples in (41), assimilating these to his analysis of subject control. However, PRO is needed to bind reflexives, since these are subject-oriented in the Slavic languages. Babby is thus forced into the not untenable position that the apparent object is really some sort of small clause subject.

- c. Zdravnik jo je poslal [PRO_{acc} delat **bolno**].
 doctor her.acc aux.3sg sent work sick.acc
 'The doctor sent her to work sick'
- d. Janeza sem učil [PRO_{acc} voziti
 Janez.acc aux.1sg taught to-drive
pijanega/utrujenega/premladega].
 drunk.acc/tired.acc/too-young.acc
 'I was teaching Janez to drive drunk/tired/too young.'

Now for the (so far as I am aware) previously unobserved correlation. It is well known that RU and PL have no ECM into infinitival clauses. Brecht (1974) points out that it is precisely Czech, Slovak and Slovenian which differ in allowing this sort of ECM.¹³ His three examples are given in (42). Two more Slovenian ones with secondary predicates are given in (43).¹⁴

- (42) a. Vidím Pavla odchazét.
 see.1sg Pavel.acc to-leave
 'I see Pavel leaving.'
- b. Počul sam psa vyt'.
 heard aux.1sg dog.acc to-howl
 'I heard the dog howling.'
- c. Janeza sem videl delati.
 Janez.acc aux.1sg saw to-work
 'I saw Janez working.'
- (43) a. Slišal sem jo peti prehlajeno.
 heard aux.1sg her.acc to-sing cold.acc
 'I heard her sing with a cold.'

¹³ Preliminary investigation indicates however that Sorbian lacks case transmission from object controllers even though it has perception verb ECM. The availability of ECM is thus a necessary but not a sufficient condition for the formal features of PRO to be able to raise to AgrO. The correlation would further break down if, on the other hand, there are varieties of colloquial RU that accept examples such as (36a) or (i) in fn. 11 with accusative, since I doubt that ECM with perception verbs is also going to be acceptable.

¹⁴ The Slovenian example (43b) is particularly instructive in showing the genitive of negation to be a structural case. This has been independently demonstrated for ECM in RU by Babyonyshev (1996), despite claims I made in *PSM* to the contrary.

- b. Še nikoli v življenju nisem videla
 still never in life neg-aux.1sg saw
 nobene ženske voziti pijane.
 not-any.gen woman.gen to-drive drunk.gen
 'In all my life I never saw a single woman driving drunk.'

So what do these two constructions, secondary predicate agreement with object controllers of PRO, and ECM into perception verb infinitivals, have in common? In order to answer this question, consider Brecht's observation that ECM is generally impossible into infinitivals in Slavic, because infinitivals in these languages have no morphological way of expressing tense. This is unlike Latin or English infinitivals, as in his examples in (44).¹⁵

- (44) a. Credo Caesarem venire.
 believe.1sg Caesar.acc to-come
 'I believe Caesar to be coming.'
- b. Credo Caesarem venisse.
 believe.1sg Caesar.acc to-have-come
 'I believe Caesar to have come.'
- c. Credo Caesarem venturum esse.
 believe.1sg Caesar.acc to-will-come
 'I believe that Caesar will be coming.'

ECM is however in principle possible into perception verb infinitivals in Slavic precisely because their temporal interpretation is always simultaneous with that of the main clause. But this only occurs in Czech, Slovak and Slovenian, because one additional factor is necessary: following Lasnik and Saito (1991), ECM requires raising out of an infinitival clause to the matrix [Spec, AgrOP] for case checking purposes. I therefore conclude that such raising is allowed in Czech, Slovak and Slovenian but not in RU or PL. Now for the correlation: the ability of PRO to raise to the matrix object is precisely what was needed in order to handle case

¹⁵ Latin (44) may be a red herring, as *Caesarem* is clearly not an instance of ECM, since accusative obtains also with the passive matrix verb *crēditur*.

transmission from object controllers.¹⁶ And I had to posit this property for exactly the same three languages. Without null case PRO, this is left as a mysterious coincidence. The null case and feature checking theories, however, offer a way to express this coincidence as a single fact: the selective ability to raise from the subject of an infinitival complement. A major question of course remains of how to explain the variation, but—without the minimalist perspective adopted here—this question could not even be posed. And that is after all what scientific progress is about, the purpose of this paper: to seek new ways of asking questions about familiar phenomena.

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¹⁶ Željko Bošković points out to me that case transmission from subject controllers, which in my system implies raising the case features of PRO for checking against those of the matrix AgrS + T complex, occurs in RU despite the dubious status of overt subject-to-subject raising in this language.

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The Syntax of Negated Prepositional Phrases in Slavic*

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0. Introduction

The Syntax of negation has been a topic of much discussion dating back to Klima's (1964) analysis of negation in English. Since then, numerous analyses have been discussed for patterns of negation in various languages, including the Slavic languages (see Babby 1980, Progovac 1994, Billings 1997, Brown 1996 for details). Common to negation in all the Slavic languages is the existence of what is usually referred to in the literature as Negative Concord. Negative Concord refers to the cooccurrence of two or more negative elements in a clause which express a single instance of negation. (1)-(6) are examples from various Slavic languages illustrating this point. In each example, a *ni*-pronoun is licensed by the presence of the overt sentential negation marker *ne*. Only the Negative Concord reading is available here. No double negation is felt, as would be in standard English.

- (1) *Nikto ničego nikogda *(ne) skazal.* [Russian]
'No one ever said anything.'
- (2) *Petr s nikým *(ne) mluvil.* [Czech]
'Peter didn't speak with anyone.'
- (3) *Marija *(ne) vidi ništa.* [Serbian/Croatian]
'Maria cannot see anything.'
- (4) *Nixto nikoho *(ne) bačyv.* [Ukrainian]
'Nobody saw anybody.'

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- (5) *Nigdy od nikogo nic *(nie) pożyczalem.* [Polish]
 'I've never borrowed anything from anyone.'
- (6) *Nikomur *(ni)sem ničesar rékel.* [Slovene]
 'I didn't say anything to anybody.'

Despite previous attempts to account for the syntax of negation in Slavic, one construction remains unaccounted for, namely, prepositional phrases in negated contexts. This paper attempts to give a purely syntactic account for the word order differences found in these constructions in East, West and South Slavic. The patterns exhibited by the various Slavic languages for this construction are shown in (7)-(8).

- (7) East Slavic and Serbian/Croatian: [ni + P + WH]
 Russian: *Anna ni s kem ne govorila.*
 Anna NEG with whom not spoke
- (8) West Slavic and South Slavic: [P + ni + WH]
 Czech: *Eva s nikým ne mluvila.*
 Eva with NEG-whom not spoke

In East Slavic and Serbian/Croatian (SC) the order [ni + P + wh] is attested in negated PPs, whereas in West Slavic and most of South Slavic, the order [P + ni +wh] is found. In this paper, I argue that this 'parametric' difference among the various Slavic languages can be accounted for in terms of a derivational feature-checking analysis, in accordance with Chomsky (1995), where the strength of features and the position of various functional categories play a key role.

This paper is organized as follows. Section 1 presents the data. Section 2 is a brief discussion of previous proposals accounting for negation. Section 3 is my proposal, and in Section 4, I conclude.

1 The Facts

Examples (9)-(12) illustrate the data my analysis proposes to account for. In East Slavic and in SC, when a *ni*-pronoun is the object of a preposition, the preposition comes between the *ni* particle (presumably proclitic) and the *wh*-pronoun. However, in West Slavic and most of South Slavic, the *ni*-pronoun follows the preposition. This order is attested not only with *ni*-pronouns but also with full DPs in Russian, which is illustrated in (9b).

- (9) a. Ona *ni* s kem (*s *nikem*) *ne* govorila. [Russian]
 She not with who (*with noone) not spoke
 'She didn't speak with anyone.'
- b. Ona *ne* govorila *ni* s odnim (*s *ni* odnim) lingvistom.
 She not spoke not with one (*with not one) linguist
 'She didn't speak with a single linguist.'
- (10) a. Ivan *ni* pro ščo *ne* dumae. [Ukrainian]
 Ivan not about what not thinks
 'Ivan isn't thinking about anything.'
- b. *Ivan pro *niščo* *ne* dumae.
 Ivan about nothing not thinks
 'Ivan isn't thinking about anything.'
- (11) a. Petr s *nikým* (**ni* s *kým*) *ne*mluvil. [Czech]
 Peter with no one (*not with who) not-spoke
 'Peter didn't speak with anyone.'
- b. *ni* sě s *kým* o to potáza [Old Czech]
 not refl with who about that consult
- c. ...v *ni* v čem takovém... [Transitional Czech]
 ...in not in what such... (Lamprecht 1986)
- (12) a. *Nije* se vratio *ni* s kīm. [Serbian/Croatian]
 NEG-AUX refl returned NEG with who
 'He didn't return with anyone.'

- b. ?*Nije se vratio s nikim*¹
 NEG-AUX refl returned with NEG-who
 'He didn't return with anyone.'

First, note that the same word order is found in Russian, Ukrainian and SC, namely, [ni + P + wh], while Czech exhibits the order [P + ni + wh]. Yet notice in (11b) that Old Czech exhibited the order [ni + P + wh] which is parallel to the order found in contemporary East Slavic and SC. And in particular, notice the fact that the reflexive clitic *se* separated *ni* from the prepositional phrase, indicating that *ni* was actually a full syntactic element, given the fact that Czech clitics always occupy the second syntactic position in the clause. Historically, all the Slavic languages exhibited this word order, namely, [ni + P + wh]. When the change took place in West Slavic, the word order in (11c) manifested itself for a period of time. The preposition *v* 'in' is pronounced twice, both before and after the *ni*-particle. I will offer no solution which accounts for the syntax of this transitional period; I refer the reader to Yadroff and Billings (this volume) and Wildman (1997) for more on preposition doubling.

Setting this issue aside, I now turn to another set of data related to the sentences in (9)-(12). The examples in (13)-(15) involve *ni*-pronouns as objects of prepositions in the absence of any overt sentential negation, i.e. there is no *ne* preceding the verb, licensing the *ni*-pronoun.

(13) Russian

- a. *Iz nikogo ona prevratilas' v važnuju figuru.*
 out-of nobody she transformed into important

personage

'From a mere nobody she turned into someone important.'

¹ In colloquial speech, it seems that for both *ni*-pronouns and *i*-pronouns, the West Slavic order is setting in, where the preposition is pronounced first [P + ni + wh] (Wayles Browne p.c.).

(14) Czech

- a. *Z nikoho se stala váženou osobou.*
 from NEG-who refl became respected personage
 'From a mere nobody she turned into a respected person.'

(15) Serbian/Croatian

- a. *Za koga sam štédio? Ni za koga.*
 for whom AUX saved NEG for whom
 'For whom did I save? For nobody.'
- b. *Za koga sam štédio? Za nikoga.*
 for whom AUX saved for NEG-whom
 'For whom did I save? For a nobody (a good-for-nothing).'

The SC examples in (15) show a nice minimal pair. In the first example, the answer to the question, 'For whom did I save?' is 'For nobody,' with the standard [ni + P + wh] word order.² In (b), however, the order is [P + ni + wh], and a semantic difference is felt, with the answer being 'For a nobody' or 'For a good-for-nothing.' Both East and West Slavic show this pattern, namely, *ni*-pronouns used in the absence of overt sentential negation, but this usage is less frequent. When this contrast occurs, the *ni*-pronoun often has a special shade of meaning, assuming a pejorative sense. In Section 3, I will return to these examples and discuss their syntactic derivations.

2 Previous Analyses


I now turn to a brief examination of three previous analyses of negation, focusing only on those aspects of the analysis which are relevant to my discussion: Klima (1964), Progovac (1994) and Billings (1997).

² We can safely assume that what is ellided in this example is 'Nisam štédio ni za koga.'

2.1 Klima (1964)

Klima (1964) notes that negated elements like ‘nobody’ and ‘nothing’ are composed of two separate syntactic constituents: a negative element such as ‘no’ or ‘not’ and an indefinite noun phrase as ‘anybody’ or ‘anything.’ He claims that the negation lowers onto the indefinite noun phrase in the syntax, yielding phrases such as ‘nobody’ and ‘nothing.’ Klima refers to this movement as ‘Neg-lowering’.

(16) Neg-lowering

- $neg + any_{[Indef]} \Rightarrow nobody, nothing$


I will follow Klima’s intuition that these negative pronouns, *ni*-pronouns in Slavic, are composed of two syntactic elements. However, unlike Klima, I will not argue for a lowering analysis, but rather one in which syntactic raising takes place. This is a perfectly natural assumption to make at this point, given the fact that syntactic lowering is not permitted in Chomsky (1993, 1995). All syntactic derivations are assumed to be built from the ‘bottom-up,’ in accordance with Chomsky’s Extension Condition. I now turn to a more recent analysis of negation, Progovac (1994).

2.2 Progovac (1994)

Progovac (1994) proposes a representational account for negation and Negative Concord in SC and brings negative and positive polarity items into Aoun’s framework of Generalized Binding. She argues that *ni*-pronouns in both Russian and SC are anaphoric on an overt realization of negation and therefore subject to Principle A of binding theory; they must be within the scope of clausemate negation and not simply within the scope of super-

ordinate negation.³ She gives the SC examples in (17)-(18) as evidence.

- (17) a. Milan *nikada* *(ne) vozi (Progovac 1994: 41)
 Milan no-when neg drives
 'Milan never drives.'
- b. *Milan ne tvrdi [da Marija poznaje *nikoga*]
 Milan not claims that Mary knows no-one-ACC
- c. *Milan ne trvdi [da *ni(t)ko* vidi Mariju]⁴
 Milan not claims that no-one sees Mary-ACC
- (18) a. Ne tvrdim [da Marija voli *ikoga*/**nikoga*.]
 not (I)-claim that Mary loves anyone/*no-one
- b. Sumnjam da Marija voli *ikoga*/**nikoga*.
 (I)-doubt that Mary loves anyone/*no-one.

(17-18) show the unacceptability of *ni*-pronouns in the presence of superordinate negation. However, unlike Russian, SC has the option of using an additional negative polarity item *i(t)ko* 'anyone' or *išta* 'anything' in sentences containing superordinate negation. Like the *ni*-pronouns, when these pronouns are objects of prepositions, the preposition separates the *i*-morpheme 'any' and the *wh*-pronoun, as shown in (19).⁵

- (19) Niti znam *i*/**ni* o *čemu*, niti vidim
 neither (I)-know any/*no about thing nor (I)-see
- išta*/**ništa*.
 any/*no thing.

³ Superordinate negation is negation which is expressed in a matrix clause, rather than in the embedded clause containing the negative polarity item.

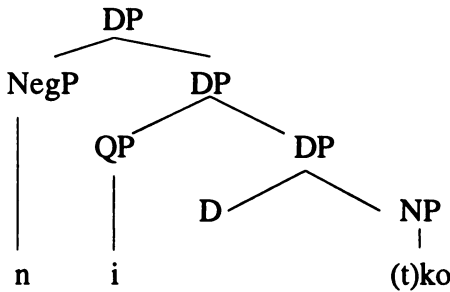
⁴ Progovac (1994) uses the form *ni(t)ko* for 'no-one' given the fact that the lexical item for *who* in Serbian is *ko* and *tko* in Croatian.

⁵ But recall that colloquially both variants are acceptable.

Progovac analyzes the phrase *ni(t)ko* ‘nobody’ as a DP composed of three separate morphemes: *n-i-(t)ko*, which breaks down to [neg-any-who], morpheme for morpheme.⁶ Progovac proposes the structure in (20) for *ni*-pronouns in Slavic.

(20) Serbian-Croatian *ni(t)ko* ‘nobody’

[_{DP} [_{NegP} *n*] [_{DP} [_{QP} *i*] [_{DP} [_D] [_{NP} (*t*)*ko*]]]]



Important to the present analysis is the fact that Progovac separates the *ni*-phrase into three individual elements. How this intuition translates into a more current analysis which makes use of the feature-checking mechanism proposed in Chomsky (1993) will be discussed in Section 3.

2.3 Billings (1997)

I now turn to Loren Billings' (1997) analysis of negated prepositional phrases in Slavic. Billings discusses the historical data shown in (11) for Czech and gives a partial explanation for the diachronic change that took place in West and South Slavic. He claims that this change was *not* syntactic, but rather a morphologization of *ni* with the WH stem. He proposes that in West and South Slavic, *ni* and the WH stem fused into a single stem which consequently caused the preposition to precede *ni*. Billings points out that there seems to be no semantic change involved, for the fused stem continues to contain *ni*'s negative polarity features.

⁶ The etymology of *ni* in Slavic is *ne + i*, which is equal to *NEG + any*.

If indeed the ‘fused’ stem still contains all the relevant semantic features, we must assume that the relevant functional projections are still present in the syntax and that the same features need to be checked. This idea will play a central role in my proposal in Section 3. Modifying Progovac’s structure, Billings proposes the structure in (21) to account for SC negated prepositional phrases.

- (21) Serbian-Croatian *ni za šta* ‘for nothing’ = ‘not for anything’
 [PP [NegP *n*] [PP [QP *i*] [PP *za* [DP [D]] [NP *šta*]]]]

(21) reveals a striking similarity to the structure in (20), proposed by Progovac for SC and Russian *ni*-pronouns. The only difference between these two structures is that Billings inserts a PP node between the adjoined elements and the DP node, so that NegP and QP are now adjoined to PP rather than to DP.

Unfortunately, Billings offers no structure to account for the rest of South and West Slavic. We might assume that it would look something like the structure in (22), although it is unclear how Billings would propose to capture this ‘fused’ stem in the syntax.

- (22) Cz: *k ničemu* [PP [P *k*] [DP [NegP *n*] [DP [QP *i*] [DP [D]] [NP *čemu*]]]]

3 The Proposal

I now turn to the details of my proposal. Following Brown (1996), I assume a derivational approach to syntax along the lines of Chomsky’s (1995) “Categories and Transformations” proposal. Brown proposes that *ni*-phrases check neg-features with an overt sentential negation marker, *ne* ‘not’ in Russian, either by overt movement to the Specifier of the sentential negation head or covertly by means of feature movement. I will assume this to be the correct analysis for convergent derivations of negated sentences. However, I will adopt a theory of feature-checking by means of Greed rather than Attract/Move for the following reason. If movement were to occur by means of Attract rather than Greed, the sentential neg-head *ne* would only need to attract a single *ni*-phrase to its Specifier in order to check off its neg-feature, potentially stranding other *ni*-

phrases within the clause with unchecked neg-features, causing the derivation to crash (see (1), (4)-(6) for examples with multiple *ni*-phrases). Adopting Greed instead of Attract allows for the possibility of multiple *ni*-phrases within a single clause if we assume that the sentential neg-head *ne* carries a [+interpretable] neg-feature, while the *ni*-phrases themselves carry a [-interpretable] neg-feature. Since the neg-head's feature is [+interpretable], it will not be deleted and erased, similar to other forms of operator movement.⁷

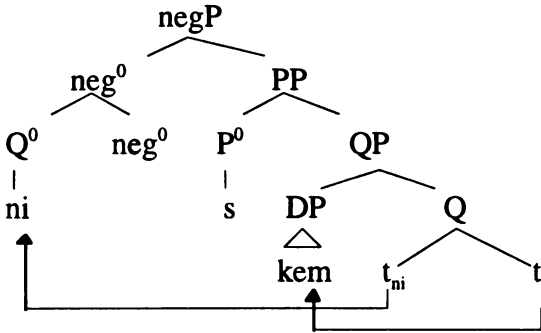
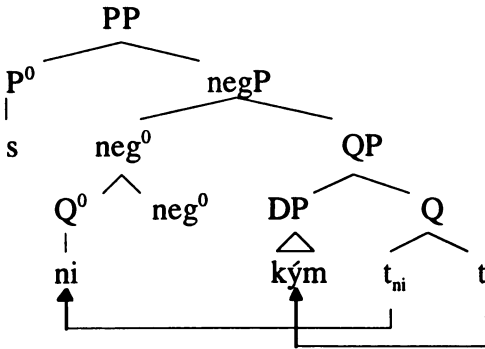
Like Klima, Progovac, and Billings, I assume that negative pronouns, *ni*-pronouns, are made up of two syntactic elements: negation and an indefinite noun phrase. However, in contrast to Progovac and Billings, I assume a more lexicalist approach to syntax, namely that *ni*, presumably proclitic, enters the derivation as a single syntactic unit.⁸ Since we never find the *n*- morpheme as an independent syntactic element, it seems unlikely that it is indeed the head of its own projection, as both Billings and Progovac suggest in the structures given in (20)-(22). The *-i*- indefinite morpheme is a bit more complicated, though, for in SC it can appear with the WH-indefinite pronoun without the *n*-. It is possible that *ni* is a 'post-syntactic' constituent in a sense, resulting from syntactic raising of the indefinite morpheme *-i* to the negative head *ne* by a phonological rule. Even if this does turn out to be true, it will not affect my analysis, as will be shown below.

3.1 Minimalist solutions

Chomsky's *Minimalist Program* allows for many possibilities in terms of feature-checking for any syntactic derivation. One option is shown in (23a) for Russian, while (23b) is a possible structure for Czech.

⁷ Chomsky (1995: 303) states, "We conclude, then, that in A-movement the formal features of the trace are deleted and erased, but in wh-movement (and other operator movement), these features remain intact."

⁸ Recall that Chomsky (1993: 195) assumes that all lexical items enter the derivation from the lexicon in their fully inflected forms.

(23) a. Russian: *ni s kem* 'with no one'⁹b. Czech *s nikým* 'with no one'

In both (23a-b), if we assume that the Q-head has indefinite features which the wh-phrase must check for convergence, then the first step is to raise the wh-phrase to the Spec of QP.¹⁰ The next step involves raising of *ni* to the head of **neg⁰**, where it checks off a strong neg-feature. The derivations are now complete, and the correct word orders result. Notice that the only difference between the Russian and Czech derivations is the fact that the neg-phrase in Czech does not dominate the prepositional phrase, but rather, the prepositional phrase dominates the neg-phrase. This raises a

⁹ To avoid confusing the neg-features of the sentential *NegP* with those of *ni*-phrases, I will refer to the lower phrase as *negP*.

¹⁰ But note that this movement will only be necessary if the DP has a strong feature which needs to be checked.

problem, however. We want these two languages to yield parallel semantics for negated prepositional phrases, but if the neg-phrase in Czech does not take scope over the entire PP, this will not happen. This problem will be resolved in (27).

Additionally, one might argue that in (23a) for Russian, raising *ni* over the preposition, which is also a head, violates Chomsky's Shortest Move constraint. Yet, if we adopt Ferguson's (1996) reformulation of Shortest Move as a condition which disallows movement across a relevant intervening checker, then this movement is allowed, since the preposition is not an intervening checker.

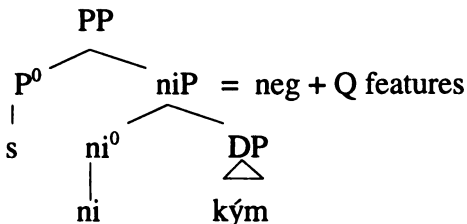
(24) a. *Shortest Move Requirement (SMR)*: (Ferguson 1996)

Given a category α moving to check feature β :
 α may not skip moving to the checking domain of the closest c-commanding Y^0 capable of checking feature β .

b. *C-command*: α c-commands β iff the first (branching) node dominating α dominates β .

A second possibility for West Slavic is that the neg-phrase and the Quantifier phrase have fused together, although the semantic features are still present. This structure is shown in (25) for Czech.

(25) Czech: *s nikým* 'with no one'



This derivation involves no movement or feature-checking of any kind, and is perhaps what Billings (1997) has in mind when he refers to a "fusion" of these features. Thráinsson (1996) suggests

that this type of feature-fusion is indeed a viable alternative, reviving an old idea which says that a language only has as much structure as there is morphological evidence for. He proposes what he calls the Limited Diversity Hypothesis, stating the following:

(26) Thráinsson's (1996) *Limited Diversity Hypothesis*

Clausal architecture is determined by UG in the sense that UG defines the set of functional categories (FCs) that languages "select" from. Cross-linguistic and intra-linguistic variations are limited to the following:

- a. It is not the case that all FCs are instantiated in all languages.
- b. The FCs selected by a given language may not be present in all clause types of that language
- c. The sequence (c-command relations) of those functional categories (dominance relations between the functional projections) that are directly related to morphological distinctions may vary from language to language, consistent with the Mirror Principle.

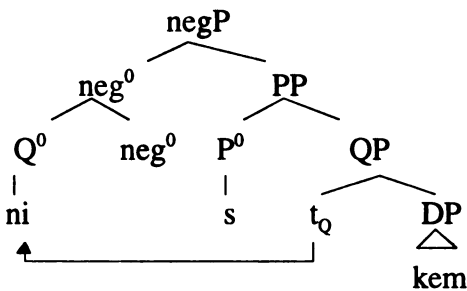
Although Thráinsson's hypothesis is appealing for many reasons, if we adopt it for the structure in (25) for Czech negated PPs, we run into the same problem as in (23b). Negation will not have scope over the entire prepositional phrase, so one would like to rule this out on semantic grounds.

However, notice in clause (b) of Thráinsson's Limited Diversity Hypothesis that the functional categories selected by a given language may not be present *in all clause types* of that language. Therefore, it is possible that *ni*-phrases which are not the objects of prepositions may have a single functional projection, call it *niP* for now, whose head includes a bundle of features which have merged prior to selection from the numeration, i.e. in the lexicon. In this case, those features are negation and indefiniteness. This may very

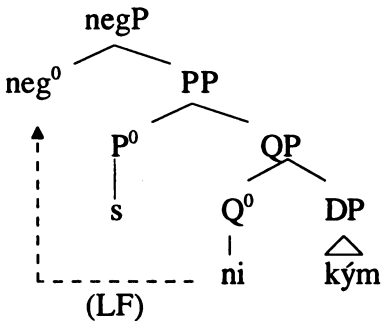
well be the correct analysis for *ni*-pronouns in Slavic which are *not* part of a prepositional phrase.

I now return to the prepositional phrases themselves. It should be clear at this point that the solution to the problem of negated PPs in Slavic lies not in the order or nature of functional projections, but rather in feature strength. The structures in (27a-b) show the solution to the problem.

(27) a. Russian *ni s kem* 'with no one'



b. Czech: *s nikým* 'with no one'



In East Slavic and SC, the *ni*-head raises overtly to a *neg*-head, dominating PP, motivated by the strong *neg*-features on **Q⁰**. In West Slavic and the rest of South Slavic, however, this raising will not occur until LF, because the *neg*-feature on this head is weak. This gives us the correct word order. Notice that these structures are

parallel: the same functional categories and lexical items are selected from the numeration in the same order. First the *wh*-word merges with the Q-head, forming a QP. Second, the preposition merges with the QP and forms a PP. The *neg*-head is then chosen from the numeration and merges with the entire PP. Once these three operations are complete and the *neg*-feature has entered the derivation, the Q-head, *ni*, raises to the *neg*-head, which bears matching *neg*-features. *Ni* adjoins to *neg*⁰ and checks off the *neg*-feature, allowing the derivation to converge.¹¹ The only difference between Russian and Czech in this example, then, is the timing of movement. Czech will wait to check its *neg*-features until after Spell-Out, on the way to LF, while Russian does so pre-Spell-Out.

This analysis accounts for the data presented in Section 1 in a clear fashion. However, one problem arises in connection with the status of *neg*⁰ as the functional head which attracts *ni* to check its *neg*-feature. Although it is clearly the case that *ni* carries a *neg*-feature, it is unclear that the label for the attracting functional head itself should be *neg*. Given the fact that there will be a higher *Neg* head merging later in the derivation, carrying the sentential negation features which are responsible for attracting *ni*-phrases to Spec *NegP* in accordance with the *Neg*-criterion, it is unappealing to posit a lower *negP* with apparently slightly different features. If these two categories were identical, we would not expect *ni*-phrases to raise to a higher functional *NegP* at all, for the lower *negP* would be sufficient for checking *ni*'s *neg*-feature. The existence of this lower functional category is not being called into question here, for there seems to be clear empirical evidence from East Slavic and SC that it does exist. However, it might be more appropriate to think of this category as a Polarity phrase: *PolP*, rather than *negP*.¹² I leave this as an open question at this point, with the understanding that the true nature of this functional category needs to be determined.

Before moving on to some additional cases, I will quickly address the issue of whether the *wh*-phrase raises to the Spec of QP

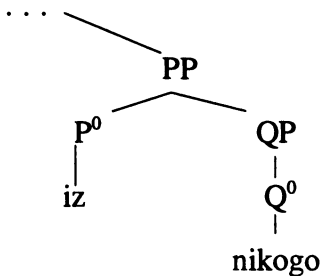
¹¹ Of course, the derivation will not converge until the *ni*-phrase actually raises to the Spec of sentential *NegP* and checks off its corresponding *Neg*-features.

¹² See Laka (1990) for a complete proposal of negation and polarity phrases.

at any point in the derivation. There seems to be no need to propose any movement of this sort. First of all, presumably the indefinite feature that the DP would check is interpretable and need not be checked unless strong. Empirical evidence is, of course, a stronger argument; however, there is no clear evidence from any of the Slavic languages to indicate that this movement need occur. Yet, there is always the possibility that the *wh*-phrase raises covertly. I put this issue aside for the moment as it is not completely clear and has no direct effect on my analysis at this point.

I now return to the examples given in (13)-(15). In Section 1, I suggested that something different is taking place in these prepositional phrases, and indeed, the semantics points to the same conclusion. In these examples, we see the lexicalization of the *ni*-phrase accompanied by a complete loss of negative polarity features. What we are left with is a universal negative quantifier carrying negative meaning of its own. (28) shows the structure for the Russian prepositional phrase in example (13). I am assuming that the Czech and SC examples work in a parallel manner.

- (28) *Iz nikogo ona prevratilas' v važnuju figuru.*
 out-of nobody she transformed into important personage
 'From a mere nobody she turned into someone important.'



3.2 Serbian/Croatian *i*-pronouns

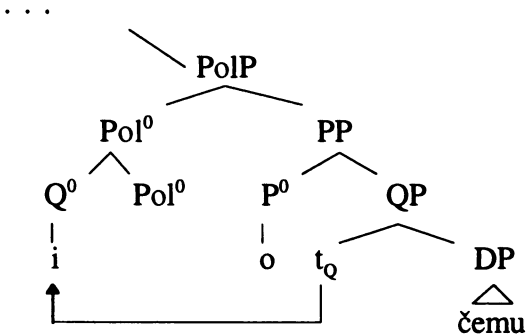
In Section 1, I mentioned the fact that SC *i*-pronouns pattern in a similar fashion to *ni*-pronouns. Recall that both *i*-pronouns and *ni*-pronouns are negative polarity items in SC, but they are licensed in different environments. *Ni*-pronouns are licensed locally by an overt

negation marker, while *i*-pronouns are licensed long-distance by superordinate negation. These phrases have in common the fact that they are both split by a preposition when they are the objects of prepositions. Three examples of SC *i*-phrases are given in (29).

- (29) a. *i s kim* (Browne 1993: 362)
 'with anybody'
 b. *i u čemu*
 'in anything'
 c. *i o čemu*
 'about anything'

I will propose that the structure for this construction is the structure shown in (30).

- (30) Serbian/Croatian: *i o čemu*



Notice that this derivation is parallel to the derivation given in (27a) for *ni*-phrases in East Slavic and SC. The only difference will lie in the value of the polarity feature in the head of PolP (where PolP = negP in (27)). In SC, when *-i-* heads the Polarity Phrase, the *i*-phrase will be licensed by superordinate negation, whereas when *ni-* heads PolP, the *ni*-phrase will have a feature value requiring clausemate negation.

3.3 Additional evidence from Russian

There is evidence from Russian in support of the argument that a lexical item can raise out of a prepositional phrase, attracted by a higher functional projection. The examples in (31)-(32) below are referred to as ‘Approximative Inversion’ constructions. Only the examples in (32) are cases where we find raising out of a PP. The examples in (31) show raising of a DP out of a QP.¹³

- (31) a. Čelovek pjat’ prišlo/?prišli na vystavku.
 people_{Gen pl} five arrived_{Neut sg/?pl} at exhibition
 ‘About five people came to the exhibition.’
- b. Rabotalo/?rabotali v ètom magazine devušek pjat’.
 worked_{Neut sg/?pl} in this store girls_{Gen pl} five
 ‘About five girls worked in this store.’
- d. Čelovek pjat’ soldatov igralo/?igrali na ulice.
 people_{Gen pl} five soldiers_{Gen pl} played_{Neut sg/??pl} in street
 ‘About five soldiers were playing in the street.’
- (32) a. časa na tri (Billings 1995)
 hours_{Gen sg} for three_{Acc}
 ‘for about three hours’
- b. časov okolo dvux
 hours_{Gen pl} about two_{Gen}
 ‘approximately two hours’
- c. kilometrov okolo pjati_{Gen}
 kilometers_{Gen pl} about five
 ‘about five kilometers’

Unlike the negated PP examples, approximative inversion constructions seem to show raising of an XP out of a constituent

¹³ These examples are adapted from Franks (1995: 166).

phrase, as opposed to a head raising out of what is standardly assumed to be a constituent, namely, prepositional phrases. Examples of approximative inversion are abundant in Russian. In addition to the obvious semantic similarities in terms of approximation, these examples share the fact that a DP has risen out of its merged position, to a position outside either a QP or PP. The Case on the nouns in these examples is crucial. In each of these constructions, the raised DP is in the Genitive Case, getting its case structurally from the quantifiers. In (32a), it is perhaps even more clear that the initial position of *časa* 'hours' is a complement to *tri* 'three', for it is in the Genitive singular, which is common to noun phrases in Russian following 2, 3, and 4. A complete analysis of these examples is beyond the scope of this paper, although I refer the reader to Billings (1995), Franks (1995) and Yadroff and Billings (this volume) for a detailed discussion of this very interesting set of data.

4 Conclusion

The evidence offered in this paper supports an analysis of *ni*-pronouns which assumes a structure involving two functional projections made up of two separate syntactic features, negation and indefiniteness, as I show in (27). The difference between the East and West Slavic examples of negated prepositional phrases can now be captured in terms of feature strength: negative features on the polarity items are strong in East Slavic and Serbian/Croatian and weak in West and the rest of South Slavic. This analysis predicts that there are other differences between these sets of languages which can be accounted for in terms of feature strength. And this is precisely what Chomsky suggests as the correct way to capture parametric differences between languages.

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Exceptional Case Marking: Perspectives Old and New*

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Since the earliest detailed investigations of sentential complementation within a transformational framework, the dual nature of the immediately post-verbal (*italicized*) NP in English examples like (1) has been noted. In some respects, that NP behaves like the subject of the lower predicate, while in other respects, it behaves like the object of the matrix verb.

(1) I believe *John* to have convinced Bill

Rosenbaum (1967), for example, argues persuasively that at least in underlying structure, *John* in (1) must be subject of the lower clause. He observes the synonymy between infinitival embedding and finite embedding, as in (2).

(2) I believe that John convinced Bill

As Rosenbaum notes, this will be expected if *John* is the subject of the lower clause in (1) as well as in (2). He also points out the contrast between *believe*-type constructions, on the one hand, and clear instances of NP + S complementation, on the other hand, with respect to semantic import of active vs. passive in the complement. (3) is synonymous with (1), but (5) is not synonymous with (4).

* I am grateful to Željko Bošković, Michiya Kawai, Arthur Stepanov, and Sandra Stjepanović for valuable suggestions and for help with the data.

- (3) I believe Bill to have been convinced by John
- (4) I compelled the doctor to examine John
- (5) I compelled John to be examined by the doctor

As noted in Rosenbaum (1967) and Bach (1977), the underlying subject status of the NP in question is confirmed by the fact that existential *there* and idiom chunks associated with the embedded clause can appear in this position. Thus, (6)-(7) contrast with (8)-(9), which are instances of NP + S complementation.

- (6) I believe there to be a man in the garden
- (7) I believe advantage to have been taken of John
- (8) *I forced there to be a man in the garden
- (9) *I forced advantage to have been taken of John

Alongside these arguments for lower subject status, Postal (1974) lists three "traditional arguments" for higher object status, based on passivization, reflexivization, and reciprocal marking. All three of these processes typically establish a relation between an object position and a subject position in the same clause. But they can also establish a relation between the underlying subject of the complement clause and the subject of the matrix under certain limited circumstances including, in particular, the infinitival constructions under discussion. The following examples are from Postal (1974, pp. 40-42).

- (10)a. Jack believed Joan/her to be famous
- b. Joan/she was believed to be famous by Jack
- (11)a. *Jack_i believed him_i to be immoral
- b. Jack believed himself to be immoral
- (12) They believed each other to be honest

This class of arguments centrally involves the nature of the boundary separating the two linked NP positions. For Postal, any clause boundary would suffice to block the relevant relations, hence the second NP position must have become a clause-mate of the first (via 'raising to object'). Chomsky (1973) offered a somewhat different perspective on these phenomena. For Chomsky (1973), the relevant structural property is not whether there is a clause boundary separating the two NPs, but rather what sort of clause boundary there is. Metaphorically, an infinitival clause boundary is weaker than a finite clause boundary. While the latter is strong enough to block the relations in question, the former is not. Chomsky formulated this relative inaccessibility of material in finite clauses (and of non-subjects of infinitives) in terms of his Tensed Sentence Condition (TSC) and Specified Subject Condition (SSC). Summarizing thus far, *John* in (1) is thematically subject of the lower predicate, but for virtually all other purposes (including morphological case¹), behaves like the object of *believe*. The mismatch between object case and downstairs subject θ -role is one of the 'exceptional' properties of the 'Exceptional Case Marking (ECM)' construction.

Brecht (1974) made the important observation that Russian differs from English in ability to license infinitival complements with lexical subject, as seen in the contrast between (13) and its Russian translation (14).

(13) Boris considers Viktor to be acting badly

(14) *Boris ščitaet Viktora vesti sebja ploxo [Russian]

¹ Following Chomsky (1980) and subsequent work, I will use the term 'Case' to refer to the abstract version of case which is argued to occur even in languages where case has no overt morphological manifestation.

The Slavic languages in general seem to pattern with Russian. (15) is the Serbo-Croatian version of Brecht's Russian example.

(15) *Boris smatra Viktora ponašati se loše [Serbo-Croatian]

This raises an important question, a question at the heart of Brecht's investigation: What allows a subject of an embedded infinitival to behave like an upstairs object in English? And what disallows it in Slavic? In theories of the 1960's, the situation was rather easy (too easy, given considerations of explanatory adequacy) to describe. The syntax of a particular language was assumed to include a long list of specific transformations, selected from a very large set made available by the syntactic component of the language faculty. Different languages simply have different lists. One such transformation (as in Rosenbaum (1967) and Postal (1974)) has the effect of raising the lower subject into higher object position. From this perspective, English has the rule; Russian doesn't. Brecht (1974, p.201) already found this kind of answer unsatisfying. "How are we to explain this difference between Russian and [English]?" he asked.

An alternative perspective might state that Russian and similar languages (whether they have the raising rule or not) disallow the 'exceptional' divorce between objective Case and object θ -role. However, there are certain constructions, now standardly called 'small clauses', displaying exceptional objective Case in Slavic, as observed by Brecht for Russian.

- (16)a. Ja sčitaju čto Ivan umen
 I consider that Ivan-nom smart-nom
 'I believe that Ivan is smart'
- b. *Ja sčitaju Ivana byt' umnym
 I consider Ivan-acc to be smart-inst
 'I consider Ivan to be smart'
- c. Ja sčitaju Ivana umnym
 I consider Ivan-acc smart-inst
 'I consider Ivan smart' [Russian]

(16)c is thematically parallel to (16)a, just as the English translations of (16)a-c are all thematically parallel. In particular, *Ivana* is thematic subject of *umnym* and not the thematic object of *sčitaju*, yet it has the accusative Case normally expected of an object. This property, too, seems general in Slavic. (17) is the Serbo-Croatian analogue of (16).

- (17)a. Smatram da je Ivan pametan
 consider-1sg that is Ivan-nom smart-nom
 'I consider that Ivan is smart'
- b. *Smatram Ivana biti pametan/pametnim
 consider-1sg Ivan-acc to be smart-nom/inst
 'I consider Ivan to be smart'
- c. Smatram [Ivana pametnim]
 consider-1sg Ivan-acc smart-inst
 'I consider Ivan smart' [Serbo-Croatian]

Thus, exceptional objective Case *is* possible in Slavic, albeit not in infinitival constructions, just in 'small clauses'.

Note that the phenomenon of object-like behavior for embedded subjects is limited even in English: it shows up only when the

embedded clause is non-finite (and not even with all infinitives, as we will see later).

- (18)a. *Jack believed [her was famous]
 b. *She was believed [*t* was famous] by Jack
 (19)a. Jack_i believed [he_i was immoral]
 b. *Jack believed [himself was immoral]
 (20) *They believed [each other were honest]

Examining English, Chomsky (1973) argues against the necessity of a raising account of the object-like properties of embedded subjects of infinitives, rejecting a 'clause-mate' analysis of the phenomena in (10)-(12). Instead, Chomsky proposes that positions in embedded sentences are in general accessible to matrix processes, subject, though, to certain general 'conditions on transformations'. The relevant one here is the Tensed Sentence Condition.

- (21) Tensed Sentence Condition:
 No rule can involve X , Y in the structure
 ... X ... [α ...]...
 where α is a tensed sentence

The rule assigning an antecedent to an anaphor, the one forbidding a pronoun from having a nearby antecedent, and the one moving an NP to subject position, can apply freely, as long as they obey TSC.² Plausibly, the rule by which a verb assigns accusative Case to an NP is similar. This gives the finite vs. non-finite contrast directly. In these terms, there is nothing obviously exceptional about the ECM construction, either for the infinitival version or for the small clause

² Chomsky (1973) doesn't actually analyze the first of these three phenomena, but suggests in a footnote that reflexives might be susceptible to such a treatment.

type. However, cross-linguistically, the ECM construction does seem exceptional, certainly to the extent that it involves a full infinitival complement.

Chomsky (1980, p.28) in the context of a general theory of abstract Case, begins to explicitly treat ECM as exceptional:

"...in English, as in some other languages, there are certain constructions with lexical subjects for infinitives. A special marked rule is therefore required to accommodate them.

We have been taking Case Assignment to be clause-bound in the unmarked case, as seems natural...Suppose that certain verbs are assigned a marked feature, call it F, which permits Case to be assigned across clause boundary. In English, for example, the verb *believe* with infinitival complement will be marked [+F], so that Case will be assigned to the embedded subject NP in...

I believe [_S [_S NP to be a fool]]"

Objective Case assignment is regulated by:

(22) -NP is objective when governed by V

- α is *governed* by β if α is c-commanded by β and no major category or major category boundary appears between α and β .

Developing these ideas in more detail, Chomsky (1981) presents a full-blown theory of Case assignment and government at the core of the 'Government-Binding' theory. The fundamental idea, as in (22), is that a maximal projection is a barrier to government. Access to the lower subject is via ' \bar{S} -Deletion', a marked rule, schematized in (24), eliminating the \bar{S} boundaries (of an infinitive) leaving just the S, assuming the basic clausal structure proposed by Bresnan (1970):

(23) \bar{S} - Comp(lementizer) S

- (24)a. I believe [_S [_S NP to be a fool]] ⇒
 b. I believe [_S NP to be a fool]

However, this approach to the phenomenon is, at best, technological, and the technology itself is quite problematic. What are S and \bar{S} and how do they fit into a principled theory of phrase structure? Notice that this notation merely masquerades as an instance of \bar{X} -theory, since S is not an X^0 so cannot be the \bar{X} -theoretic head of \bar{S} , and S itself seems to have no head at all. For this reason, among several others, Chomsky (1981) proposes that \bar{S} is really CP, the maximal projection of Complementizer, and S is really IP, the maximal projection of Infl, the tense-agreement inflectional morpheme. (24) now evidently becomes (25).

- (25)a. I believe [_{CP} [_{IP} NP to be a fool]] ⇒
 b. I believe [_{IP} NP to be a fool]

But in (25), *believe* doesn't govern NP even after ' \bar{S} -Deletion' (that is, CP-Deletion).

Chomsky (1986a) redefines 'government' in such a way that government does obtain in the ECM configuration (with government of IP by V in such cases entailing government of the Specifier of IP). Further, \bar{S} -Deletion is crucially eliminated in favor of direct selection of IP by the governing verb (since the (1986a) extension to government of Specifier of IP by V requires θ -marking of IP by V). The phenomenon of ECM is once again relatively easy to characterize (though relying on rather technical details of the definition of 'government' without much in the way of independent justification). But how can ECM be blocked, for example in Slavic infinitivals?

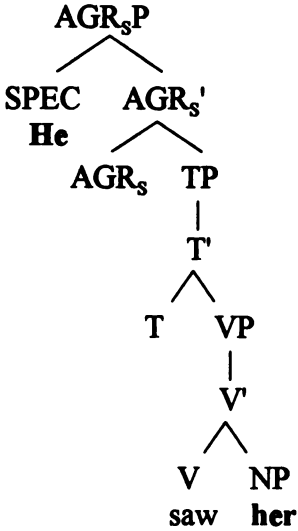
One possibility is 'subcategorization' in the sense of Chomsky (1965). English (epistemic) verbs, as a lexical property, can take IP complements; Russian ones cannot. Pesetsky (1982), though, argues on appealing conceptual grounds that subcategorization, which is known to largely be redundant with semantic selection, should, in fact, be reduced entirely to semantic selection. But then, as discussed by Bošković (1996), we cannot arbitrarily assign IP to some clausal complements and CP to others, when there is no semantic difference determined by the V-clause relations.

At this point, then, there are two difficulties:

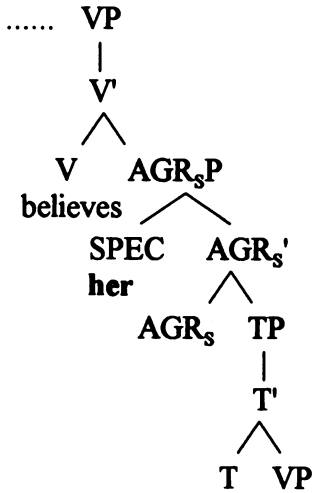
- (26)a. The quite technical nature of the definition of government needed for the instances of Case assignment at issue;
- b. Once (a) is accepted, the problem of blocking 'exceptional' government in, e.g., Slavic.

To begin to address these, note that on standard assumptions, structural Case appears to involve **three** distinct structural configurations, which I will represent here in terms of one version of Pollock's (1989) 'split Infl' hypothesis.

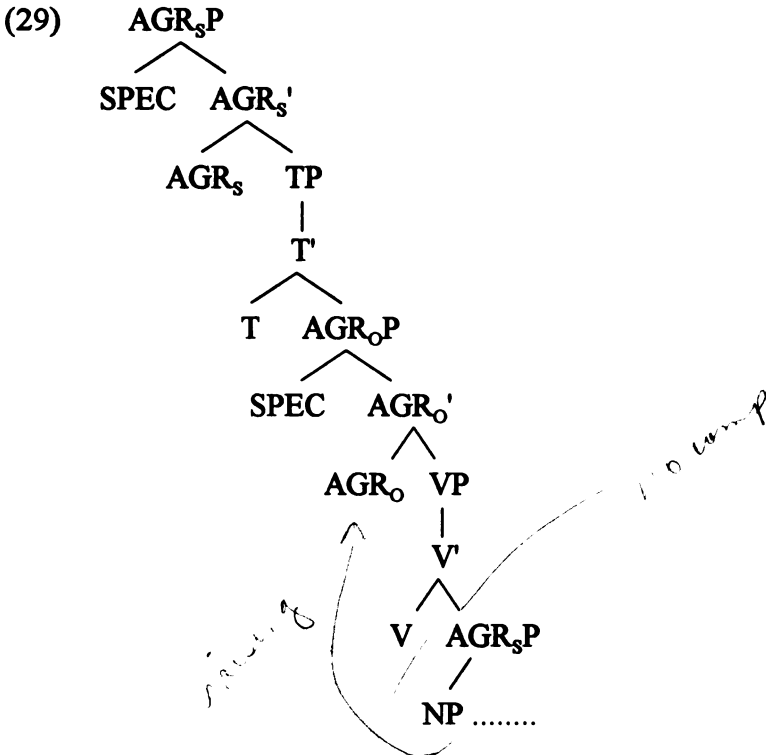
(27) He saw her



(28) He believes her to be intelligent

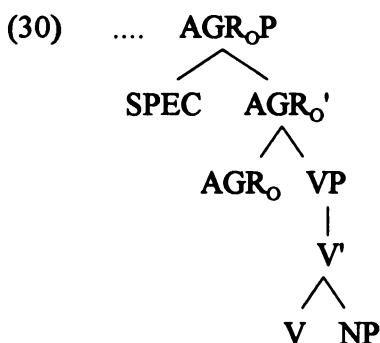


Lasnik and Saito (1991) (based on arguments like those in Postal (1974) that the ECM subject does move into the higher clause) and Chomsky and Lasnik (1993) (see also Lasnik (1993)) suggest a structural unification of assignment of nominative Case (**He** in (27)) and 'exceptional' accusative Case (**her** in (28)), in terms of the Chomsky (1991) extension of the split Infl hypothesis. The unification is 'Minimalist' eschewing arbitrary geometric notions like government and instead relying on core \bar{X} -theoretic relations.



Note the parallelism between (27) and (29). In (27), T raises to AGR_s and, when T is finite, the combination licenses nominative Case in SPEC of AGR_s. In (29), V raises to AGR_o, and, when V has the accusative feature, the combination licenses accusative Case in SPEC

of AGR_o . Nominative and exceptional accusative are now both licensed in the same \bar{X} -theoretic configuration: SPEC-head. In fact, we should go further. Both in terms of morphology and in terms of syntactic behavior, English exceptional accusative behaves like simple accusative. Thus, the null hypothesis is that they are licensed in the same position, i.e., that even simple accusative is licensed in the SPEC of AGR_o , as in (55):



Structural Case licensing then is invariably a SPEC-head relation with an AGR head, though, under standard assumptions, for nominative the Case licensing must be overt, while for accusative, it is covert. (But see Koizumi (1993; 1995) and Lasnik (1995a; 1995b) for arguments that even the latter is overt.) We are thus rather close to a principled description of ECM, yet (virtually as a consequence) farther than ever from an account of lack of ECM. I suggest that a more detailed examination of infinitival constructions will provide the basis for a solution to this problem. There are at least two major types of infinitival constructions in English, the ECM type we have been considering, and the 'control' type with null thematic subject 'PRO':

- (31)a. Mary promised [PRO to finish the work]
 b. Mary persuaded John [PRO to finish the work]

As Brecht (1974) observes, while Russian lacks the former class of infinitives, it has the latter. (And this seems generally true of Slavic). (32) is a representative Russian example displaying control.

- (32) Ivan obeščal zakončit' rabotu v srok
'Ivan promised to finish the work on time' Brecht (1974)

Brecht (1974, p.202) observes that the class of Russian verbs permitting such complements are "specified in the lexicon as permitting only the future tense in [their] complement." Intriguingly, Stowell (1982, p.562) makes a strikingly parallel claim about control constructions in *English*. He notes that in such sentences, "the time frame of the infinitival clause is *unrealized* with respect to the tense of the matrix in which it appears. In other words, the tense... is that of a *possible future*..." Descriptively speaking, we might state this as (33).

- (33) PRO is licensed by [-finite, +future] Infl.

Perhaps, as argued by Martin (1996), in a refinement of a proposal by Chomsky and Lasnik (1993), this licensing involves a special ('null') Case for PRO. Any Infl that is finite or has tense would then license a Case on its Specifier (nominative in the former instance, 'null' in the latter). Now in general, ECM infinitives do not allow PRO subjects:

- (34)a. I believe [Mary to be clever]
b. *I believe [PRO to be clever]

Stowell observes that in contrast to control infinitives, ECM infinitives also

"...do not have a regular internally specified 'unrealized' tense. Instead, the understood tense of these complements with

respect to the tense of the matrix is determined largely by the meaning of the governing verb..." Stowell (1982, p.566)

Brecht (1974) also sees a semantic contrast between the control class of verbs and the *believe* class. However, he sees it virtually the opposite of the way Stowell does, at least on the face of it. For Brecht, the *believe* class verbs have the semantic property that they "do not determine the time of action of their complements." [p.203] Brecht uses this property to explain why Russian lacks such complements: Since this class of verbs "do not impose a specific tense upon their complements, there is no way of recovering the tense which is deleted in the process of Infinitivization ... Accordingly, these sentences are blocked automatically after verbs of this class in a language like Russian, where tense is deleted, that is, where the morphological form of the infinitive does not, so to speak, keep a record of the underlying tense of the complement." One might wonder, then, why such sentences are possible in English. In this regard, Brecht notes that English infinitival complements to *believe*-class verbs can signal time distinctions. He gives the following three pairs of sentences (his (32-34)) to show this:

- (35)a. I believe John to be leaving
- b. I believe John to have left
- (36)a. I consider Dick to be fulfilling his end of the bargain
- b. I consider Dick to have fulfilled his end of the bargain
- (37)a. I judge John to be of sound mind
- b. I judge John to have been of sound mind

As Brecht points out, in the (a) sentences, "the action of the complement is simultaneous with the time of the action expressed by the matrix verb", while in the (b) sentences, "the action of the complement is understood to precede that of the matrix verb." Brecht acknowl-

edges that the morphological means used to make this distinction in English is actually one of aspect, hence that the basic Russian vs. English contrast is still not directly explained. We still need to know why Russian cannot use aspect in this way. I do not fully understand Brecht's answer to this question, so I will simply quote it.

"... it seems that a viable, albeit speculative explanation might be found in an observation made by Roman Jakobson to the effect that: in English verbs have aspect while in Russian aspects have verbs ... Put in a more explicit if far less elegant way, in English every verb may occur in a progressive or perfect aspect approximately as every verb may form a present or past tense. By contrast, in Russian there are verbs with only perfective forms or only imperfective forms (eg. *prodolžat'* 'continue', *sostojat'* 'consist of', *prepodavat'* 'teach', etc.). It is possible that the paradigmatic nature of the aspectual distinctions expressed by the English and Latin verb (as opposed to the Russian) and the paradigmatic character of tense may well be connected." [p.205]

Shortly, I will return to a related but somewhat different take on the Russian-English difference.

If we assume, with both Brecht and Stowell, that an infinitive of the *believe* complement type has no tense of its own, we might, again following Stowell, hypothesize a structural difference between English control complements and ECM complements in the following way:

- (38) Tense must raise to Comp (by LF) so a clause with tense (including 'unrealized future tense') must be a CP.
- (39) Infinitival complements of epistemic verbs lack tense, hence are (or at least can be) bare IPs.

Under the assumption that CP is a barrier to A-movement,³ and that SPEC of AGR_O is an A-position, (38) now gives us the generally correct consequence that ECM is not possible with the class of verbs taking 'unrealized future' complements:⁴

(40) *John tried [_{CP} [_{IP} Mary to buy a car]]

This follows since *Mary* would have to raise out of the complement to get to the appropriate SPEC of AGR_O Case position in the higher clause. We further make the (correct) prediction that raising to higher subject position is disallowed with these predicates:

(41) *Mary was tried [_{CP} [_{IP} *t* to buy a car]]

Infinitival complements of epistemic verbs display exactly the reverse set of properties. ECM (i.e., raising to SPEC of AGR_O) is possible, as is raising to subject position (SPEC of AGR_S):

(42) I consider [_{IP} John to be smart]

(43) John is considered [_{IP} *t* to be smart]

³ As first suggested by Aoun (1982), as far as I know.

⁴ There are a few verbs, of which *want* is a prime example, that do not fit quite so neatly into this pattern, as they allow both PRO and lexical NP as subject of their complements:

(i) I want to win

(ii) I want John to win

See Lasnik and Saito (1991) for evidence (following Bach (1977)) that sentences like (ii) do not involve ECM in the relevant sense - raising into the higher clause. Martin (1996) shows how the Case on *John* is licensed internal to the lower clause.

I note in passing that this result is interestingly reminiscent of that sought by McCawley (1970): the unification of raising to subject position with raising to 'object position'.

Returning to the contrasting ECM situation in Slavic, there are now two further correct predictions: since ECM is impossible in Slavic infinitivals, raising to subject position is also:

- (44) *Smatram [Ivana biti pametan/pametnim]
 consider-1sg Ivan-acc to be smart-nom/inst
- (45) *Ivan je smatran [*t* biti pametan/pametnim]
 'Ivan is considered to be smart' [Serbo-Croatian]

And since ECM is possible 'into' small clauses, raising to subject position out of them is predicted to be available:

- (46) Smatram [Ivana pametnim]
 consider-1sg Ivan-acc smart-inst
 'I consider Ivan smart'
- (47) Ivan je smatran [*t* pametnim]
 'Ivan is considered smart' [Serbo-Croatian]

This difference between English and Slavic follows if all 'full' clauses in Slavic must be CPs, while certain infinitivals in English are IPs. And this difference, in turn, will follow, given Stowell's suggestion (38), if Infl in Slavic is invariably tensed. (There is no clear reason to think that small clauses have Infl at all; and, by Stowell's semantic criteria, they have no tense.) This peculiar property of infinitival complements to epistemic verbs arguably reflects a more general peculiar property of English. Enç (1991) argues that even *finite* clauses in English are not invariably tensed. She observes that formal

present tense in English does not refer to present time. (48) is bad precisely because the adverb demands reference to present time (i.e., utterance time) but present tense in English does not make such reference.

(48) *John runs down the street right now

In Slavic, on the other hand, formal present tense is also semantic present tense, as evidenced by the following examples, which directly contrast with (48):

- (49) Ivan bežit po ulice (v dannyj moment) [Russian]
 Ivan runs down street in present moment
 'Ivan is running down the street (at this moment)'
- (50) Ivan beži niz ulicu [Serbo-Croatian]
 Ivan runs (escapes) down street

The Slavic pattern seems much more common cross-linguistically than does the English pattern, just as absence of ECM infinitivals seems much more common than their presence. This suggests (following Pesetsky (1992); see also Martin (1996)) that what is 'exceptional' about English is that Infl need not be tensed. Slavic Infl represents the unmarked situation in necessarily carrying tense.

A curious property of Japanese ECM, and an asymmetry in that property, can possibly be explained in related terms. Japanese displays apparent ECM even in finite clauses. Kitagawa (1986) observes that there is a distinction between present and past embedded Infl in this regard, with the former allowing accusative Case for the subject as an alternative to nominative, but the latter allowing only nominative:

- (51) kanozyo wa [sono otoko ga/o sagisi da] to sitteiru
 she TOP that guy-nom/acc swindler PRES Comp know
 'She knows that the guy is a swindler'
- (52) kanozyo wa [sono otoko ga/o sagisi datta] to sitteiru
 she TOP that guy-nom/*acc swindler PAST Comp know
 'She knows that the guy used to be a swindler'

Michiya Kawai (personal communication) points out that while formal past tense *ta* is a true semantic tense, formal present (actually the absence of past) is much like present tense in English in not referring to present time. Rather, again just as in English, it is used for habitual action or state, or future (*I go to Europe this summer*), but not for present action. Based on this, Kawai suggests that non-past finite clauses in Japanese are actually tense-less, and this tense-less-ness is responsible for the possibility of ECM. At this point, an interesting question of implementation arises. Until now, I have basically been following Stowell in assuming that presence of Comp is incompatible with raising and with ECM (which, departing from Stowell, I have taken to be another instance of raising). But both the present tense example (51) and the past tense example have *to*, glossed as a complementizer. So ECM should be impossible in both examples, contrary to fact. It might be that, as Fukui (1986) argues, *to* is not actually a complementizer. This would allow ECM (e.g., via raising to SPEC of AGR₀ in the matrix for the accusative version of (51)). Then, to maintain Stowell's basic account, it would be necessary to posit a null C in (52) (or the true past tense operator would not be able to raise to its required LF position). As for the licensing of nominative Case in (51), I follow Saito (1985) in assuming that, unlike in English, nominative Case in Japanese is independent of Infl.⁵

⁵ One of Saito's concerns was the existence of multiple nominative constructions in Japanese (and their non-existence in English).

One remaining mystery (Isn't it always?) is a simple present sentence such as:

(53) He likes Mary

Given that nominative in English clearly *is* determined by Infl, how is nominative licensed on *He* here? And why is accusative unavailable, unlike the situation in Japanese?

(54) I believe he likes Mary

(55) *I believe him likes Mary

I speculate that it is another property of English Infl that is relevant here. As discussed by Fukui (1986), there is no clear reason to think that agreement has an active role in Japanese clause structure. On the other hand, agreement is relevant in English. Suppose now that alongside 'true' tense, agreement is also a potential licenser of nominative Case. Agreement then provides a source for the nominative Case on *he* in (53) and (54).

(55) remains problematic. Suppose, as suggested above, that ECM involves A-movement (to SPEC of AGR₀). One conceivable approach is to continue to assume that \bar{S} (i.e., CP) is a barrier for A-movement, and to further assume that an English finite clause, even one lacking true semantic tense and without an apparent complementizer, must invariably be a CP. This would prevent the embedded subject in (55) from checking exceptional accusative Case. If there is no such invariant requirement on finite clauses in Japanese, then ECM 'into' certain finite clauses will correctly be allowed. This account is possibly the best we can do, given current understanding, but there are at least two reasons to seek an alternative. First, the account demands arbitrary syntactic categorization of the sort very plausibly questioned

by Pesetsky (1982) and Bošković (1996), among others. Second, it establishes no connection between the special nature of nominative Case in Japanese and the possibility of ECM into finite clauses.⁶ Here I can merely hint at an alternative. At least since Chomsky (1981), transformational theorists have explored the 'last resort' character of movement in general and A-movement in particular. Last Resort began to play a central role in syntactic theory in Chomsky (1986b), and it is at the core of the Minimalist Program developed in Chomsky (1993; 1994; 1995). One of the major facts at issue has been the general impossibility of movement from one structural Case position to another. This would directly explain the ungrammaticality of English examples like (55). The impossibility of raising out of control complements, as in (41), repeated as (56), is also explained, given the theory of Martin (1996) that the PRO subject in a control complement has a Case that is licensed by the particular tense⁷ in such clauses.

(56) *Mary was tried [_{CP} [_{IP} *t* to buy a car]]

The special nature of nominative Case in Japanese, perhaps as a sort of default, would exempt it from last resort considerations.

Returning finally to Slavic, following the insights of Brecht and Stowell, I assume that there are just two potential varieties of infinitives (at least for the classes of languages investigated here, including English and Slavic). There are those with 'unrealized' future tense (occurring as complements of verbs like *try* and *persuade*), and those with no tense at all (occurring as complements of epistemic verbs). If, as I have suggested, all clauses in Slavic must be tensed,

⁶ Of course, a much wider ranging investigation than the present one is necessary to determine if there is, in fact, a connection.

⁷ The 'unrealized' future tense of Stowell (1982).

there simply can be no infinitival complement of an epistemic verb in those languages. The absence of the ECM possibility has already been demonstrated and discussed at length. Note that in this instance, Last Resort is not relevant; rather, the necessary underlying structure just could not exist. Consider now the control possibility. Since PRO is licensed by unrealized future tense, all else equal, this possibility should also be lacking, given the selectional properties of unrealized future: it does not occur in the complement of epistemics. This prediction, too, is borne out:

- (57) *Ja sčitaju PRO byt' umnym/umen [Russian]
 I consider PRO to be smart-inst/nom
 'I consider myself to be smart'

To summarize, a significant old question - What allows ECM where it is possible and what disallows it otherwise? - is at least as significant as it originally was in terms of current linguistic theory. And a promising direction for an answer (I don't pretend to have provided any more than a direction) lies in the insights of earlier work, especially Brecht's insight that tense is relevant to ECM and to the distinction between ECM and control, and Stowell's independent statement of this insight in the terms of the Government-Binding framework. Thus, as is often the case, careful attention to the past provides one of the best guidelines for how to proceed into the future.

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Null Expletives and the EPP in Slavic: A Minimalist Analysis

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1 Introduction

The purpose of this paper is to consider the status of null expletives and the EPP in Slavic sentences lacking a canonical NP subject. My central empirical claim is that under basic minimalist assumptions,¹ the properties of Slavic impersonals can be fully accounted for in an analysis that rejects null-expletives, but still recognizes EPP effects. The broader theoretical claim of this paper involves the apparatus of the Minimalist Program itself: I will argue for a more direct relationship between the overt morphology in a given numeration and the featural composition of the functional categories that this numeration projects. That is, I will argue that the presence of particular features in a functional head is not exhaustively determined by the properties of the functional head itself, but by the particular morphology of the lexical items involved in a derivation.

The Minimalist Program presents a crucial departure from GB theory that bears prominently on how grammatical relations such as subject (and thus the EPP in general) are understood. In GB theory it was assumed that grammatical relations were closely linked to structural positions, which, in turn, were determined by X-bar theory. Grammatical relations are now reduced to checking relations. In the course of my analysis of the EPP in Slavic, I will show that the notion of a unified subject position (i.e., [Spec, IP] in GB terms) crucially fails to account for the fact that the complex of traditional subject properties can be distributed over a sequence of positions in an articulated INFL structure. In the present analysis, I will view subject-verb agreement, nominative Case assignment, and the satisfaction of the so-called “EPP-feature” to consist of distinct checking operations, unified by the spec-head relation.

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¹ See Chomsky 1995, as well as Ura 1996 and Thráinsson 1996.

The present paper will be organized in the following way. In section 2 I will present some preliminary data and a sample derivation and structural representation. In section 3 I will provide a more in depth analysis of the data and provide cross-linguistic independent motivation for the separation of the EPP and Case features. Sections 4 and 5 concern predicate agreement and null expletives.

2 Data, Derivation and Structure

(1) is the standard proposal for phrase structure in Chomsky 1995, ch. 3 (=MPLT):

(1) [_{AGRSP} Spec AGRs [_{TP} Spec T [_{AGROP} Spec AGRo [_{VP} DP [V DP]]]]]

At the end of this section, I will modify (1) to conform to the specific morphological properties of the Slavic impersonals below in (3-9).²

My central claims with regard to the projection of phrase structure are summarized in (2) below:

(2) Procedure for Projecting Phrase Structure and Featural Composition

a. Project only those functional categories for which there is overt morphological evidence in the numeration (see Thráinsson 1996);

b. Assume that the featural composition of heads is *not* universal, i.e., it is also determined by overt morphological evidence

We now consider the Slavic impersonals in (3-9). Here, as elsewhere in this paper, the focus is on East Slavic and Polish,

² I make use of the (Agr-less) multiple-spec structure proposed in Chomsky 1995, ch. 4 (=Categories and Transformations) only in the case of the Old Russian example in (14-15), where the features of the head, T, differ in terms of strength (see Ura 1996 on the theory of multiple feature-checking).

where, within Slavic, the peculiar configuration of impersonals with accusative arguments is most common (see Mrazek 1990:96-104).³

(3) Russian:

a. Uši založilo
ears: ACC PL clogged-up: N SG
'My ears clogged up.'

b. *Uši založili
ears: NOM PL clogged-up: PL

c. On vse žalovalsja na nasmork, a založilo uši
he PART complained at sniffles but clogged-up: N SG ears: ACC
'He kept complaining of sniffles and then his ears clogged up.'

(4) Russian:

Dux zaxvatilo
breath: M ACC SG seized: N SG
'It took my breath away.'

(5) (West) Ukrainian:

a. Teper cju formu vil'no vžyvajet'sja v našij movi
now this form: F ACC SG freely use: 3SG REFL in our language
'This form is now freely used in our language.'
[Smerečyns'kyj 1932:25]

b. Teper cja forma vil'no vžyvajet'sja v našij movi
this form: F NOM SG use: 3SG REFL
'This form is now being freely used in our language.'

c. ??Teper vil'no vžyvajet'sja cju formu v našij movi
use: 3SG REFL this form: F ACC SG

³ I will use the term "impersonal" to refer to constructions that lack a nominative NP and subject-verb agreement.

(6) Ukrainian:

Bat'ka kole v boci
 father: ACC SG pierce 3SG in side
 'My father has a sharp pain in his side.'

(7) Polish:

a. Skargi przyjmuje się w biurze
 complaints: ACC PL accept: 3SG REFL in office
 'Complaints are taken in the office.'

b. ???Skargi przyjmują się w biurze
 complaints: NOM PL accept: 3PL REFL

c. ?Przyjmuje się skargi w biurze
 accept: 3SG REFL complaints: ACC PL

(8) Polish:

Sprawę załatwi się
 matter: ACC SG resolve: 3SG REFL
 'Things will work out.'

(9) Czech:

a. Kratších slov se užívá častěji
 shorter words: GEN PL REFL use: 3SG more-often
 'Shorter words are used more often.'

b. *Kratší slova se užívají častěji
 shorter words: NOM PL REFL use: 3PL

c. Užívá se spíš kratších slov než delších
 use: 3SG REFL rather shorter words: GEN PL than longer
 'Shorter words are used rather than longer ones.'

An immediate observation is that the word order in the impersonal constructions in (3-9) entails a preverbal non-nominative NP-constituent. This word order is judged to be "discourse-neutral" by native speakers and occurs discourse-initially. Thus I will argue that

these objects have not undergone topicalization to a special position (adjoined to IP according to King 1995), but instead are raised to satisfy the EPP, where the EPP position, in addition to lacking a particular discourse function (see Babyonyshev 1996:13-27), is no longer associated with nominative Case or subject-verb agreement.

Thus the structure of the impersonals in (3-9) should reflect the fact that these are non-agreeing predicates with a preverbal non-nominative DP. According to (2a), AGRsP will not be projected and according to (2b), T will lack a Case feature, marking this functional head as underspecified. The absence of a Case feature in T, which checks nominative Case when present, is crucial to this analysis because it allows impersonals to converge without a feature mismatch in TP (i.e., a DP marked accusative in a checking configuration for nominative Case), resulting in a canceled derivation (Chomsky 1995:308-310). The fact that the numeration in each of the impersonals in (3-9) contains a DP will force the projection of a D-feature on T, which the syntactic evidence in the (a) sentences in (3-9) suggests is strong.⁴ In accordance with the movement operation Attract,⁵ I will assume that in the (a) sentences in (3-9) the strong D-feature on T is checked overtly by a raised argument which is initially Merged as an internal argument of the verb. Note that the accusative (or genitive) object in these impersonals is the only available constituent whose D-feature can enter into a checking relation with T.

As for those sentences in (3-9) which do *not* show OV word order, I will assume that the theme-rheme organization of the sentence has superseded overt feature-driven movement, i.e., the object in these sentences is obligatorily rhematic.⁶ Theme-rheme

⁴ The strong D-feature on T is the way in which the EPP is formulated in the Minimalist Program.

⁵ Attract is formulated the following way (Chomsky 1995:297, slightly modified): "A functional category attracts the feature F if F is the closest feature that can enter into a checking relation with its head." Thus, strictly speaking, Attract operates on features only. For overt movement, I will assume "generalized pied-piping" of the lexical material associated with the raised D-feature in order to satisfy interface conditions at PF: the D-feature itself cannot be pronounced and, thus, at PF is uninterpretable.

⁶ The possibility of theme-rheme structure affecting feature-checking, in the present case delaying it until after spell-out, has not been discussed in the literature as far as I

structure can be considered part of the phonological (i.e., pre-spell-out) component, which affects the surface syntax (see Chomsky 1995:343).⁷ I will return to instances of the object appearing post-verbally in section 2.

In (10) I give the derivation for (3a) and in (11), below, I give its structural representation. The other examples of impersonals with pre-verbal accusative DPs should have a similar derivation and representation.

(10) Uši založilo: Derivation

Merge D, V = [_{VP} [_V založilo [_D uši]]]

Merge VP, AGRo = [_{AGRoP} AGRo [_{VP} [_V založilo [_D uši]]]]

(motivated by the ACC Case on *uši*)

Merge AGRoP, T =

[_{TP} T [_{AGRoP} AGRo [_{VP} [_V založilo [_D uši]]]]]

(motivated by the Tense feature on *založilo*)

(overtly) **Move D** to [Spec, TP] =

[_{TP} uši_i T [_{AGRoP} AGRo [_{VP} [_V založilo [_D t_i]]]]]

(by Attract: the D-feature (plus the lexical material associated with it) raises to check the EPP in [Spec, TP])

(covertly) **Move AGRo + V** to T =

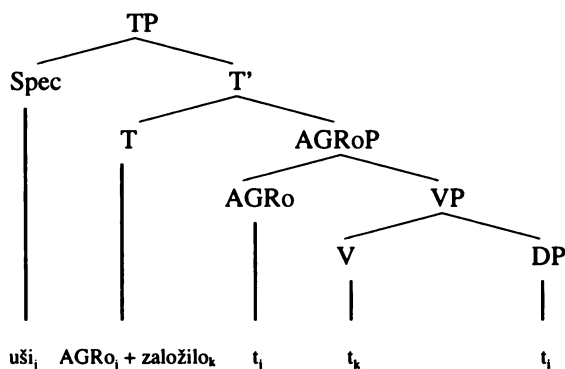
[_{TP} uši_i AGRo_j založilo_k T [_{AGRo} t_j [_{VP} [_V t_k [_D t_i]]]]]]

(ACC Case on *uši* is checked against the AGRo + V + T complex head)

know. Here I provide only an initial formulation which will have to be refined in future research.

⁷ Babby 1980 demonstrates clear syntactic effects of theme-rheme structure on the basis of an entirely different set of data.

(11) Uši založilo: Structural Representation



Note that the normal checking configuration for the accusative argument never occurs: due to the lack of overt Verb-Movement to AGRo (and then to T) in Russian and the other Slavic languages that we are considering (See Bailyn 1995 on Russian), the direct object cannot have its accusative Case checked overtly in [Spec, AGRoP]. Here I assume Holmberg's generalization which states that overt object raising is contingent on overt verb raising. The lack of overt object raising allows us to propose an AGRoP with no Specifier. As a result, the object DP can raise overtly to [Spec, TP] with no violation of Shortest Move: the moved element has not skipped an appropriate landing site. The complex head AGRo + V adjoins to T at LF where V (in conjunction with AGRo) checks accusative Case on the object DP in a spec-head relation.⁸

⁸ Note however that AGRo is only indirectly involved in the checking of accusative case morphology, i.e., the accusative Case feature itself is an N-feature of V. In the impersonal predicates we are considering, there are two factors which may allow the nonprojection of AGRoP: i) there is no object agreement with the predicate; and ii) the accusative Case of the object can be checked elsewhere, namely, wherever V adjoins to a functional head whose specifier can host the accusative argument. If T lacks its usual (nominative) Case feature in such predicates, as I have suggested above, the possibility arises for the accusative Case feature to be checked (post-Spell-Out) in its (i.e., T's) specifier. It will be recalled that the accusative object already moves to [Spec, TP] overtly to check the EPP feature; V moves independently

3 Analysis

3.1 The Data

The basic facts regarding (3-4) were discussed above. I will return to (3c) shortly. The Ukrainian and Polish examples in (5) and (7-8) demonstrate impersonalization as a productive process associated with affixation, in contrast to the type of impersonal predicate in (3-4) and (6) which is limited in Russian and Ukrainian to a relatively small number of lexical items. In (5) and (7-8), as well as in Czech (9), the reflexive morpheme is functioning in a voice-altering capacity. In Ukrainian and Polish the reflexive morpheme shares the lexical property of optionally projecting AGRsP; i.e., the verb may optionally merge with an accusative object or a nominative subject. In the impersonals in (5) and (7-8), when AGRsP is *not* projected, it follows that there will be no subject-verb agreement and T will be deprived of its Case feature. The resulting form in both languages is a middle.⁹ In the personal (b) sentences in (5) and (7), AGRsP *is* projected as well as the Case feature on T to check nominative. The Ukrainian example in (5b) is a canonical passive. The Polish example in (7b) is quite marginal; the permissibility of subject-verb agreement for such Polish expressions with the reflexive morpheme (i.e., for middles rather than for pure reflexives) depends on the semantics of the VP, an issue I will not pursue here (see Dziwirek 1994). The Ukrainian example in (5c), where the accusative object appears post-verbally, is readily interpretable, but infelicitous in a discourse-neutral setting.

Note that in (9a) there is no accusative Case checking; the verb here, *užívati se*, assigns lexical Case. Though the oblique object can still raise by Attract to check the strong D-feature on T, the way in which its Case is assigned may differ from the other examples. Chomsky 1995 (ch. 4) argues that only structural case is checked. Lexical (or inherent) Case is interpretable and thus need not enter a

to T (post-Spell-Out) to check Tense. Thus, a maximally simple alternative structure for (11) is: $[_{TP} DP_i T [_{VP} V [t_i]]]$.

⁹ See Lavine 1997 for more on the voice properties of such constructions.

checking relation. This argument has been challenged by Stjepanović 1997, following Lasnik 1995, where the bearer of lexical case is shown to raise out of VP to enter a checking relation in the usual way. At this point in the analysis, it is not necessary to take a position on the way in which lexical Case is treated. My sole claim in (9a) is that regardless of Case, the DP *kratších slov* raises to [Spec, TP] where it checks the strong D-feature on T.

As a final note on the data in (3-9), I want to clarify that the OV surface word order is by no means obligatory. In (3c) and (9c) I have indicated a fully acceptable alternate word order. These are examples of contrastive focus, where the focused (i.e., rhematic) constituent (*uši* in (3c) and *kratších slov* in (9c)) is post-verbal and, in the Russian example, marked by neutral (falling) intonation.

3.2 Cross-linguistic Motivation for the Separation of the EPP and Case Features

The existence of constructions in which an object acquires the positional property of subject without the associated Case marking has long been observed in the “pre-theoretical” descriptive literature. Keenan 1976 notes examples of such “inverse constructions” in Biblical Hebrew, and Saharan and Bantu languages. The intuition that languages can split subject functions such as the traditional positional constraint and nominative Case is confirmed by recent research within the Minimalist Program. Jonas 1996 demonstrates the independent checking relations of the EPP and Case features in Icelandic Transitive Expletive Constructions (TECs), such as (12) :

(12) Icelandic TEC at Spell-Out

[_{AGR_{SP}} Pað málaði_j [_{TP} útlendingur_i [_{AGR_{OP}} húsið_k [_{VP} t_i t_j t_k]]]]
 there painted foreigner the-house
 ‘A foreigner painted the house.’

Here, the lexical subject checks its Case feature (at LF) in [Spec, TP], while a productive overt expletive checks the EPP feature in [Spec, AGRsP].¹⁰

Standard English ECM constructions also provide evidence for EPP-satisfaction independent of Case. (13) is from Lasnik 1995:

(13) English ECM Construction

I believe [someone to be [*t* here]].

Note that movement of 'someone' to the embedded subject position is driven by the strong D-feature on the embedded non-finite T. There is no other feature to attract it; the specifier of the embedded TP is not a Case position. The accusative Case of 'someone' is subsequently checked in the usual fashion by movement to the [Spec, AGRoP] of the matrix verb. Following the assumption that the N-features of AGRo in English are weak, this movement must be covert by Procrastinate (see Lasnik 1995:621-624 and Chomsky 1995:345-346 for discussion).¹¹

¹⁰ Jonas (personal communication) suggests that the EPP feature is not universally contained in T, but may be hosted by other functional heads. Note in the Icelandic TEC in (12) that the strong D-feature responsible for EPP effects is hosted by AGRs. The [Spec, TP] position in Icelandic appears to be associated with a particular discourse interpretation, namely indefiniteness (Jonas 1996:168-169, 178-181), which drives the movement of the lexical subject.

¹¹ An alternate analysis which accounts for ECM facts based on Greed, rather than Attract, is proposed in Bošković 1997. Under a strict interpretation of Greed, namely that only the morphological requirements of the moved item can provide the driving force for movement, Bošković argues that the embedded subject *someone* cannot move to satisfy the EPP feature alone: such movement would be "altruistic." Instead, the embedded subject moves *overtly* to the matrix [Spec, AGRoP], where it checks its own Case feature. See Bošković 1997:105-124 for the details of his analysis.

The effect of the EPP is more convincingly isolated in raising structures that *do not* contain a potential Case-marked position for the embedded subject to move into. Note the Icelandic Raising Expletive Construction below, where the matrix verb does not assign accusative Case (i.e., there is no matrix AGRoP projection):

(i) Það virðast [margir menn [vera *t* í herberginu]]

there seem many men to-be in the-room

'Many men seem to be in the room.' [Jonas 1996:169]

The final supporting evidence that I will introduce to demonstrate that the EPP can be checked independently is the nominative object construction in Old Russian, as illustrated in (14):

(14) Old Russian (OR) Nominative Object Construction

Korolju bylo ta ruxljad' dati
 king: M DAT was: N that property: F NOM give: INF
 'It was for the king to give back that property.'
 [Timberlake 1974]

In this example T's D-feature is checked overtly by an oblique DP while its Case feature is checked in the covert (post-Spell-Out) syntax by the nominative object.¹² Thus (14) presents the logical possibility that two features of a functional head may vary with respect to strength. Here, following Ura 1996, I will argue that T enters into multiple feature-checking relations, i.e., the independent checking of particular "subject functions," necessitating the multiple-Spec structure proposed in Chomsky 1995, ch. 4 (§10). Following the modified "Categories and Transformations" phrase structure, the dative subject is merged in its theta-position in the Spec of the "light verb" projection, ν P.¹³ Following Babby 1997, I will treat the dative marking on the subject of the infinitive as lexical (inherent) Case assigned by the infinitival affix on the lexical verb. At this point I will further adopt the minimalist assumption that lexical case enters the derivation [+interpretable]. In accordance with the procedure I assume in (2b) for projecting the featural composition on functional heads, light ν will not have its usual (accusative) Case feature, and T, in the absence of subject-verb agreement, will not have phi-features to be checked. Factoring out movement of the copula (which does not obligatorily appear in such Old Russian constructions), the following structure obtains:

¹² I assume that the preverbal position of the object *ta ruxljad'* is a result of its thematic discourse status.

¹³ Following Chomsky 1995, ch. 4, ν is the higher head of a layered VP-shell for transitive verbs.

(15) OR Nominative Object Construction

[_{TP} Korolju_i [ta ruxljad'_k [T [_{VP} t_i [v [_{VP} dati t_k]]]]]]

D-feature Case feature

4 Agreement

I now turn to the question of agreement morphology on the impersonals in (3-9). The invariable 3 neut sg verb form is generally explained in one of two ways: 1) as the default verbal morphology in Slavic for non-agreeing predicates; or 2) as ordinary subject-verb agreement with a null expletive, which is presumed to be neut sg as well.¹⁴ Before discussing an alternative analysis of the inflectional morphology in (3-9), I will broaden the sample of data to include personal variants of the Russian impersonals in (3-4):

(16) Russian (cf. (3)):

Mama založila rebenku vatu v uxo
 mother: FNOM stuffed: F child: DAT cotton: ACC in ear
 'The mother stuffed cotton in her child's ear.'

(17) Russian (cf. (4)):

Nemcy zaxvatili Pragu
 Germans: NOM PL seized: PL Prague: ACC
 'The Germans seized Prague.'

¹⁴ Null expletives have been posited for Slavic impersonals by various researchers including Sobin 1985, Kipka 1989, Franks 1995 and Schoorlemmer 1995. Note that null expletives are argued to account not only for the agreement morphology on the verb, but also for the EPP in sentences lacking a canonical (nominative) subject. By divorcing the strict requirement of nominative Case from EPP-satisfaction, we have seen how the EPP-feature can be checked by a predicate's *internal* argument. As for subject-verb agreement, I will argue that Slavic impersonals exhibit no morphological evidence for projecting the AGRsP category, where subject-verb agreement ordinarily takes place.

The agreeing predicates in (16-17) demonstrate an alternation in the way in which the verb Merges. To pursue an explanation of such an alternation, I will now turn to the impersonal neut sg morphology itself. The notion of “default morphology” is not an explanation in minimalist terms. It suggests that the predicate “looks ahead” at the resulting syntactic configuration and then accordingly selects non-agreeing morphology. According to minimalist assumptions, following the assumptions of the Strong Lexicalist Hypothesis (or what Di Sciullo and Williams 1987 refer to as “Syntactic Atomicity”), items are selected from the lexicon fully-inflected. The syntax is projected based on the morphological features of the selected lexical items, and not *vica versa*.

Following Babby 1996, I will argue that inflectional morphology in its non-canonical use (i.e., when *not* marking agreement) systematically affects Argument Structure. The neuter singular ending in its non-canonical use is lexically stipulated to show no subject-verb agreement. In minimalist terms, after Merging with a complement, a verb with this type of morphology immediately proceeds to target AGR_o, as in the derivation in (10); a subject position within VP as in (1) is not projected. In accordance with (2a), the functional category AGR_{sP}, where subject-verb agreement is checked, will also not be projected, and the verb itself, in accordance with (2b), will lack its usual phi-features.¹⁵ In such a case, if a subject NP were projected, it would have to raise to a [Spec, AGR_{sP}] position where agreement would fail and the derivation would crash. In contrast, in the agreeing predicates in (16-17), the verb (+ complement) *must* Merge with a subject and ultimately target AGR_{sP} because the [-interpretable] phi-features that agreeing verbs contain must be checked.

Independent evidence for a separate non-agreeing affix, distinct from neut sg morphology, is found in the Polish impersonal / personal passive participle alternation. In (18), the non-agreeing

¹⁵ The 3 neut sg ending *-o* is thus best treated as derivational, rather than inflectional, morphology since it directly affects predicate Argument Structure and is not involved in agreement. This makes the lack of phi-features on impersonal verbs a completely predictable property.

impersonal affix *-o* in the (a) sentence is contrasted with agreeing *-e* in the (c) sentence:

(18) Polish Impersonal vs. Personal Participial Predicate

a. Impersonal Passive

Pszenicę siano zawsze jesienią
 Wheat: F ACC sowed: IMPERS always in-fall
 'Wheat is always sowed in the fall.'

b. *Pszenicę siane...

c. Personal Passive

Dziecko było kochane przez matkę
 child: N NOM was loved: N SG by mother: ACC
 'The child was loved by the mother.' [Dziwirek 1994:182-185]

Note that in the Polish adjectival (participial) declension, *-o* is a distinct *derivational* morpheme¹⁶ whose sole function is to mark impersonal predicates. In (18b) we see that the neut sg affix (*-e*) cannot project an impersonal, but agrees with neut sg subjects as in the canonical passive in (18c). When the neut sg ending does not differ phonologically from the non-agreeing impersonal ending, the two inflections must be considered separate homophonous endings.¹⁷

¹⁶ The Polish and Ukrainian *-o* in *-no/-to* constructions was initially the neut sg inflectional ending in the nominal (i.e., short form) declension of adjectives. With the loss of the nominal declension of adjectives in these languages, inflectional *-o* was reanalyzed as belonging to the derivational stem to form a new unchanging predicate category. For a general account of the history of *-no/-to* constructions see Brajerski 1979 for Polish and Shevelov 1969 for Ukrainian.

¹⁷ Thus the neuter singular gloss in (3-4), as well as in (19-21) below, may be best marked as IMPERS(onal), as in (18a).

5 Null Expletives

In the previous section we addressed the problem of agreement in impersonal predicates. In the absence of a functional projection for subject-predicate agreement, the role of null expletives is sharply reduced. Furthermore, by separating the EPP from the nominative Case, we saw that null expletives need not be invoked to check the EPP-feature on T.¹⁸

According to the present analysis, the EPP is satisfied by the operation Attract on the verb's sole internal argument. It should be borne in mind that null expletives are semantically vacuous: they contain only the categorial D-feature. The question is: do we need this D-feature? The claim in this paper is that invoking null-expletives to account for non-agreeing impersonal predicates amounts to introducing a D-feature into a derivation where its effect is already independently accounted for.

¹⁸ The question of *overt* expletives in Slavic is discussed in Billings 1993 and Franks 1995. In Ukrainian, for example, both Billings and Franks argue that the neuter singular pronoun *vono* may function as an expletive in impersonal sentences, filling an otherwise open subject position. The following example is cited in both sources:

- (i) Vono b ne vadylo s'ohodni pohuljaty
 PART NEG harm: NSG today take-a-walk

'It would do no harm to go for a walk today.'

This indeed would suggest an alternate strategy for satisfying the EPP than the one proposed in this paper; however, treating Ukrainian *vono* as a place-holder for unfilled subjects is not unproblematic. First note that *vono* in (i) is optional and, in fact, judged by my informants as marginal. Note also that *vono* is not used in weather verbs such as those below in (19-21) in contrast to English *it* or German *es*:

- (ii) (*Vono) sutenije
 growing-dark: 3SG

'It is growing dark.'

Finally, there is no evidence that *vono* takes part in the expletive-associate constructions described in Chomsky 1995:340-348. Chomsky suggests that expletive constructions alternate with nonexpletive constructions to affect a difference in interpretation between overt raising of a subject (in the case of nonexpletive constructions) and the covert raising of its features (in expletive constructions). Since Slavic organizes theme-rheme structure by means of scrambling, expletive-associate constructions, by hypothesis, should be unmotivated.

A final question concerns the null-expletive proposal for impersonals of the “weather verb” type, as in (19-21):

(19) Russian:

Stemnelo

grew-dark: N SG

‘It grew dark.’

(20) Polish:

Wypogodziło się

cleared-up: N SG REFL

‘It cleared up.’

(21) Czech:

Zahřmělo

thundered: N SG

‘It thundered.’

To determine the structure for these expressions, I refer back to (2) for the projection of phrase structure and featural composition of functional heads. According to (2a) there will be no AGR projections. T will be projected to check the Tense feature of the verb but, in accordance with (2b), will *not* contain a D-feature. Uninterpretable features appear in the syntax only in relation to the morphological properties found in the numeration. Thus, in (19-21) my claim is that the T projected by the “weather verbs” is even more underspecified: not only does it lack a Case feature, as in the other impersonals we have analyzed, but it also lacks a D-feature to attract nominal material.¹⁹ The claim, then, is *not* that all Slavic sentences strictly adhere to the EPP, but instead that the D-feature on T, if projected, is strong, and by the operation Attract, will induce the raising of an impersonal’s internal argument.

¹⁹ The option of “relativizing” the specification of T’s D-feature appears to be possible only in nonexpletive languages (cf. English: *Is raining). I thank Željko Bošković for bringing this problem to my attention.

6 Conclusion

In the present analysis I have argued for what can be labeled a *lexicalist application* of the minimalist apparatus. All elements of the functional layer of structure that I have proposed are motivated by the overt morphology in a given numeration. I have shown that when Case and Agreement are factored out, the strong D-feature on T can be checked independently, allowing for EPP-effects in the absence of a canonical nominative NP subject. I have also provided evidence for the claim that a verb's inflectional morphology may function in a *derivational* capacity to affect a predicate's Argument Structure. This allowed for an analysis in which special neuter singular morphology on impersonal verbs could be associated with the lack of an AGRsP projection.

In addition to maintaining a constrained version of the EPP for Slavic, I was able to show that null expletives in Slavic impersonals lack any functional motivation. An analysis was developed which both accounts for the uninterpretable D-feature on T, and resolves the question of agreement features on V, without introducing phonologically null and semantically vacuous additional elements.

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Individual-Level Predicates and Pronoun Doubling in Colloquial Russian*

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1 Introduction

Sirotinina (1974) describes a construction in Colloquial Russian where pronoun doubling of *subjects* is allowed only if the predicate denotes a "permanent property" of the subject, as in (1). There is no pause between the noun and the pronoun. Sirotinina points out that pronoun doubling is disallowed when the verb denotes "a concrete action," as in (2).

- (1) **Koški oni** privykajut k mestu.
Cats-NOM they-NOM get-used to the-place-DAT
'Cats get used to the place.' (Sirotinina 1974: 211-212)
- (2) ***Koški oni** sejčas vo dvore kričat.
Cats-NOM they-NOM now in (the)yard scream
'(The) cats are screaming in the yard.'

Sirotinina concludes that subject doubling is possible only in a special kind of construction, which she calls "qualitative constructions." However, the semantics of these "qualitative constructions" seems to have very much in common with the semantics of so-called "individual-level predicates" (as opposed to "stage-level predicates," the terminology originally proposed in Carlson (1977)). Chierchia

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(1995), for example, gives the following definition of these two predicate classes, exemplified in (3-4):

I[individual]-level predicates express properties of individuals that are permanent or tendentially stable. S[stage]-level predicates, per contrast, attribute to individuals transient, episodic properties. (Chierchia 1995: 176)

(3) I have brown hair.

(4) I am sitting on this chair. (Kratzer 1989/1995: 1)

If Sirotinina's observation is reframed in terms of the semantic/syntactic distinction between stage- and individual-level predicates (SLP and ILP henceforth), we find that pronoun doubling is restricted to cases where the predicate is individual-level. (I will, however, return to this point in the conclusion to show that pronoun doubling with ILPs is only one case of a certain semantic family that licenses this construction.)

In this paper, current theories of ILP/SLPs (Kratzer/Diesing, Bowers, Chierchia) are employed to give an account of pronoun doubling with subjects. It is found that the same account will provide an explanation of the distribution of doubled *objects* in Colloquial Russian, a less frequent phenomenon not discussed by Sirotinina:

(5) **Viktora ego vse uvažajut**
 Viktor-ACC him-ACC all-NOM respect
 'All (people) respect Viktor.'

The organization of this paper is as follows. Section 2 presents the data on constructions with doubled NPs: the types of subjects and objects that can be doubled by pronouns and the types of predicates allowing doubling. In section 3 current theories of ILPs are evaluated. An analysis of the Russian data, termed within the Principles and Parameters framework with the addition of some ideas from the Minimalist Program, is given in section 4. Section 5 concludes with theoretical implications and directions for future research.

So, what is the nature of doubled arguments? Why is doubling allowed with ILPs and disallowed with SLPs?

2 The Data

Pronoun doubling with arguments of ILPs has the following properties: such constructions contain a nominal which is immediately followed by a personal pronoun with matching features (person, number, gender). There is no pause between the doubled argument and the pronoun. Pronoun doubling is optional. It is widely attested in Colloquial Russian (for example, in conversations and lectures) and also in fiction. It is not allowed in Literary Russian.

Pronoun doubling occurs only if certain requirements for both predicates and their arguments are met. However, before discussing structural properties of pronoun doubling with ILPs, it is important to recognize that the left-most nominal in this construction is not a clause-external topic.

2.1 *Are Doubled Arguments External Topics?*

Compare (5), a sentence with object doubling and an ILP, and (6), which contains a clause-external topic and a SLP:

- (6) **Viktor** | ja s nim včera govorila.¹
 Victor-NOM | I-NOM with him-INSTR yesterday talked
 ‘Victor, I talked with him yesterday.’

There are important typological differences between external topics and doubled arguments of ILPs. While external topics are usually treated as base-generated outside of CP (see Bailyn (1995: 184 ff.),² King (1993: 98-100)), I will assume that the left-most nominal in constructions with ILPs is generated inside the CP. Prosodically, external topics constitute an independent prosodic unit

¹ The sign "|" indicates a pause here.

² Bailyn (1995) provides a rather detailed account of differences between Left-Dislocation (i.e., external topics in Nominative Case that are base-generated as adjoined to CP and co-indexed with resumptive pronouns within the clause) and Topicalization (i.e., IP-adjunction of a Case-marked element). Although his ideas are very similar to ours, he is not concerned with doubling.

and are always followed by a pause, while doubled arguments of ILPs are part of intonational contour of the clause, with no relevant pause following them. As for Case assignment, external topics in Russian always bear Nominative Case, while for doubled objects there is a choice of bearing either the default Nominative or the same Case as the pronoun. Finally, while for external topics there are no restrictions on the predicate type, doubled arguments occur only with ILPs (and some related structures).

I will conclude from this evidence that the left-most nominal in the pronoun doubling construction with ILPs is not an external topic.

2.2 Types of Doubled Arguments

While the linguistic literature has focused only on subject doubling, the findings presented here indicate that pronoun doubling is not limited to grammatical subjects and occurs with objects as well. Some speakers allow simultaneous subject and object doubling in certain contexts.³

I will now consider examples of subject, object, and simultaneous subject-object doubling. In each case, doubling is permitted only when some essential property of the doubled argument is involved.

2.2.1 Subject Doubling. Sirotinina (1974) provides a detailed account of subject doubling in constructions describing some essential property of its referent. The following are some of Sirotinina's examples:

- (7) **Žizn'** **ona** **voobšče** **ne** **legkaja.**
 Life-NOM it-NOM usually not easy
 'Life is usually not easy.' (Sirotinina 1974: 211)

³ It should be noted, however, that the typology of doubled arguments would receive a more adequate account from a pragmatic perspective (i.e., what kinds of topics can be doubled). The discourse properties of pronoun doubling are the subject of work in progress.

- (8) **Jazyk on imeet bezgraničnuju**
 Language-NOM it-NOM has limitless
sferu dejstvija.
 sphere-ACC of- application-GEN
 'Language has a limitless sphere of application.'
 (Sirotinina 1974: 212)

Sirotinina points out that the pronoun cannot be used when the verb denotes a single action. She illustrates that point with examples like (9-10). The verb in (9) denotes a "concrete" action, making pronoun doubling ungrammatical. The contrasting sentence (10) contains a verb denoting "the permanent quality of the subject,"⁴ which allows for pronoun doubling:

- (9) ***Rita ona obedaet s druž'jami.**
 Rita-NOM she-NOM is-having-dinner with friends-INSTR
 'Rita is having dinner with her friends.' (Sirotinina 1974: 213)
- (10) **Rita ona obedaet i čitaet, vsë uspevaet.**
 Rita-NOM she-NOM has-dinner and reads, everything-ACC manages
 'Rita can have dinner and read at the same time, she can manage everything.' (Sirotinina 1974: 213)

2.2.2 *Object Doubling.* As was noted above, pronoun doubling is not limited to subjects but can also occur with objects, as illustrated in (5) and (11):

- (11) **Dissertacii ix Maša bystro čitaet.**
 Dissertations-ACC hem-ACC Masha-NOM quickly reads
 'Masha reads dissertations quickly.'
 Or: 'As for dissertations, Masha reads them quickly.'

⁴ Sirotinina (1974) conducted an experiment in which her subjects were asked to judge the grammaticality of sentences like (9-10). The subjects rejected the (9) type sentences as ungrammatical. Moreover, when Sirotinina heard some people using such pronouns in spontaneous speech, she asked them to explain why they used it. None attempted to self-correct, but rather the following explanations were offered: "Somehow you cannot do it without the pronoun"; "the pronoun indicates a property, without it the sentence is more specific. *Always* requires a pronoun."

It seems that the meaning of (5) is something like: "Viktor has the property such that everybody respects him." Similarly, the meaning of (11) is: "Dissertations have the property such that they are easy for Masha to read." There is an obvious parallel between subject and object doubling.

Furthermore, indirect objects can also be doubled, as in (12):

- (12) **Viktorom im vse vosxiščajutsja.**
 Viktor-INSTR him-INSTR all are-delighted-with
 'All (people) are delighted with Viktor.'

2.2.3 Subject + Object Doubling. Some speakers accept simultaneous subject and object doubling in certain contexts. For example, imagine a situation where two speakers have a conversation about Masha and how long it takes her to knit sweaters, hats, mittens, and so on. Then one of the speakers asks: "And what about socks?" The other might reply:

- (13) **Maša ona noski ix bystro vjažet.**⁵
 M-NOM she-NOM socks-ACC them-ACC quickly knits
 'Masha knits socks quickly.' Or: 'As for Masha and (her ability to knit) socks, she knits them quickly.'

Sentences with two doubled arguments possess a marginal status and require a detailed pragmatic explanation.

2.3 Types of Individual-Level Predicates

Sirotnina (1974) lists several properties of predicates that denote "a permanent characteristic" of their subjects and allow pronoun doubling: a) the verbs are usually in the present tense; b) they frequently occur with adverbs like *vsegda* 'always' or *voobsče* 'generally'; c) pronoun doubling is rarely used with the so-called "short" adjectives (usually indicating a temporal quality) and often

⁵ As pointed out to me by Irina Sekerina, a slightly different word order, with doubled objects preceding doubled subjects, is more acceptable:

- (i) **Noski ix Maša ona bystro vjažet.**
 Socks-ACC them-ACC M-NOM she-NOM quickly knits
 'As for socks, Masha knits them quickly.'

used with the so-called "long" adjectives (which tend to indicate a permanent quality/characteristic), as in (14-15); d) pronoun doubling also takes place with what Sirotinina labels "emotional" types of predicates using a deictic *takoj* 'such/like that,' as in (16); e) pronoun doubling is frequent with predicative nouns, as in (17):

- (14) **Gorod on opasnyj.**
 City-NOM it-NOM dangerous-LONG
 'The city is dangerous.' (Sirotinina 1974: 215)
- (15) **Kapron on xolodnyj.**
 Nylon-NOM it-NOM cold-LONG
 'Nylon is cold' (in the sense of not retaining body heat well)
 (Sirotinina 1974: 215)
- (16) **Oficery oni vse takie.**
 Officers-NOM they-NOM all-NOM such
 'Officers are all like that.' (Sirotinina 1974: 215)
- (17) **Griša on jurist.**
 Grisha-NOM he-NOM lawyer-NOM
 'Grisha is a lawyer.' (Sirotinina 1974: 215)

So, what particular properties make a predicate individual-level? It seems that it is the combination of multiple factors (lexical, morpho-syntactic, combinatorial, contextual) that allows the predicate to receive an individual-level reading. The change in one of these factors might shift the interpretation of a particular sentence from individual- to stage-level, and vice versa. For example, Chierchia (1995: 177-178) points out that while certain lexical items (stative verbs like *know*, *love*, adjectives like *intelligent*, *altruistic*, predicative NPs like *be a man*) express permanent or tendentially stable properties, it is possible to set up special contexts where they will be reclassified as transient, temporal:

- (18) John was intelligent on Tuesday, but a vegetable on Wednesday. (Chierchia 1995:177)

Similarly, morpho-syntactic properties alone do not guarantee that a particular predicate is interpreted as individual-level. Compare (15) to another example of Sirotinina's, given here in (19):

- (19) Čaj (*on) xolodnyj.
 Tea-NOM (*it-NOM) cold-LONG
 'The tea is cold.' (Sirotinina 1974: 216)

While in (15) *xolodnyj* 'cold' is interpreted as a permanent property of *kapron* 'nylon' (in the sense that nylon does not retain body heat well), in (19) the same adjectival predicate is stage-level, denoting an episodic, temporary property of *čaj* 'the tea.' (Note also the alternation between the generic and specific readings of the subjects.) However, in an appropriate context the sentence like (19) can be re-interpreted as describing a stable property of its subject. For example, we can think of some culture where tea is used only as a cold drink, and in this context the subject must be interpreted generically and its predicate as individual-level, making pronoun doubling grammatical:

- (20) Čaj on xolodnyj (v ètoj strane).
 Tea-NOM it-NOM cold-LONG (in this country)
 'Tea is cold (in this country).'

What seems to be common for all individual-level predicates is either the presence of some overt quantificational adverb like *always*, *frequently*, *usually* or a special contextual setting where such a generic operator is implied. (I will discuss this issue in more detail later.)

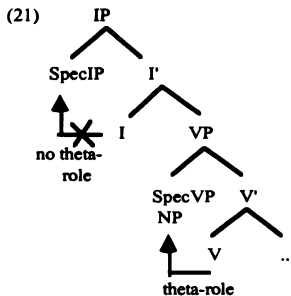
In recent literature on individual- and stage-level predicates it has been shown that this distinction has ramifications in the grammars of various languages: see Bowers (1993), Carlson (1977), Chierchia (1995), Diesing (1992), Kratzer (1989/1995) among others for English; Diesing (1992) and Kratzer (1989/1995) for German; Smith (1991) for Chinese; Carnie (1995) and Doherty (1992) for Irish; Rapaport (1987) for Hebrew; DeGraff (1995, 1997) for Haitian.

I will show that (Colloquial) Russian is another language whose grammar reflects this distinction by allowing optional pronoun doubling with individual-level predicates and related constructions.

3 Theoretical accounts of SLP/ILP distinction

3.1 Kratzer (1989/1995) and Diesing (1992)

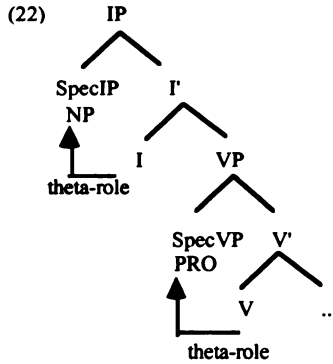
Both Kratzer and Diesing defend the view that the semantic difference between the two predicate types arises from their difference in syntactic structure. Based on her analysis of primarily German data, Kratzer proposes that at the level of D-structure the individual-level subjects originate in SpecIP,⁶ while the stage-level subjects are base-generated at the SpecVP position. Diesing modifies Kratzer's theory by postulating different properties of INFL for the two predicate types. She compares SLPs to raising structures in the following way: stage-level Infl does not assign a theta-role to SpecIP, and the subject, which originates in SpecVP, raises to SpecIP to receive Case:



According to Diesing, ILPs, on the other hand, are similar to control structures: their Infl assigns a theta-role and Case to SpecIP. Diesing suggests that the meaning of this theta-role is "has the property x." The individual-level subjects are base-generated in SpecIP and control PRO in SpecVP:⁷

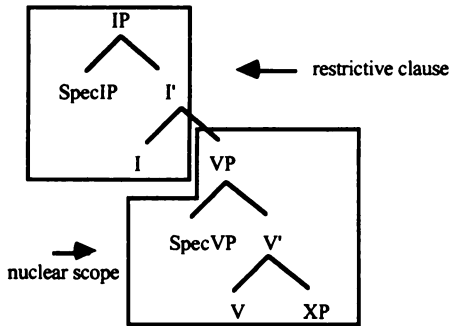
⁶ Kratzer (1989/1995) and Diesing (1992) also discuss unaccusative ILPs whose subjects are base-generated within the VP. In the current paper I will limit myself to discussing only unergative ILPs.

⁷ Diesing acknowledges the problem with the government status of PRO in SpecVP and leaves this matter for future research.



For both Kratzer and Diesing, the deep-structure position of subjects determines whether they are interpreted generically or existentially at the level of logical form. Diesing proposes the so-called "tree-splitting algorithm," or Mapping Hypothesis:⁸

- (23) *Diesing's Mapping Hypothesis (tree splitting):*
 Material from VP is mapped into the nuclear scope.
 Material from IP is mapped into a restrictive clause.



Diesing's Tree Splitting Algorithm is supposed to account for the fact that bare plural subjects of SLPs, as in (24), can have either an existential or a generic interpretation, while bare plural subjects of ILPs, as in (25), can be interpreted only generically.

⁸ See also Bailyn (1995) for a generalization of this principle.

(24) Firemen are available.

(25) Firemen are altruistic.

3.2 *Bowers (1993)*

Bowers (1993) argues, in our opinion unconvincingly, that the syntax of ILPs and SLPs is exactly the opposite of that proposed by Kratzer and Diesing. Citing some evidence from the syntax and semantics of small clauses in English, he defends the view that ILPs, and not SLPs, contain a raised internal argument, while SLPs contain PRO in the VP-internal subject position controlled by an argument in SpecTP. One of Bowers' observations, which will be the most relevant to our analysis, is that subjects and objects exhibit similarities in their syntactic and semantic behavior. Bowers extends Diesing's idea of tree-splitting into the nuclear scope and a restrictive clause for the interpretation of subjects to accommodate objects as well.

3.3 *Chierchia (1995)*

Chierchia (1995) provides a semantic account of differences between the two predicate types. On the assumption that the semantics of ILPs is rooted in the aspectual system, Chierchia arrives at the conclusion that:

All languages have a distinctive habitual morpheme (say, *Hab*) which can take diverse overt realizations... this morpheme can be taken to be a functional head in an aspectual projection. The semantically relevant characteristic of this morpheme is that of carrying an agreement feature requiring the presence of the **Gen**-operator in its Spec...

The habitual aspectual marker... has an agreement feature (call it '+Q', for quantificational) requiring a suitable adverb (the null **Gen** or, possibly, some other quantificational adverb) in its Spec. (Chierchia 1995: 197-198)

Chierchia further assumes that ILPs must be licensed by a **Gen**-operator, which is a (modalized) universal quantifier. He treats the subjects of both ILPs and SLPs uniformly, as originating in SpecVP. He also suggests that the scope of a Q-adverb is free.

3.4 Summary of ILP/SLP Theories

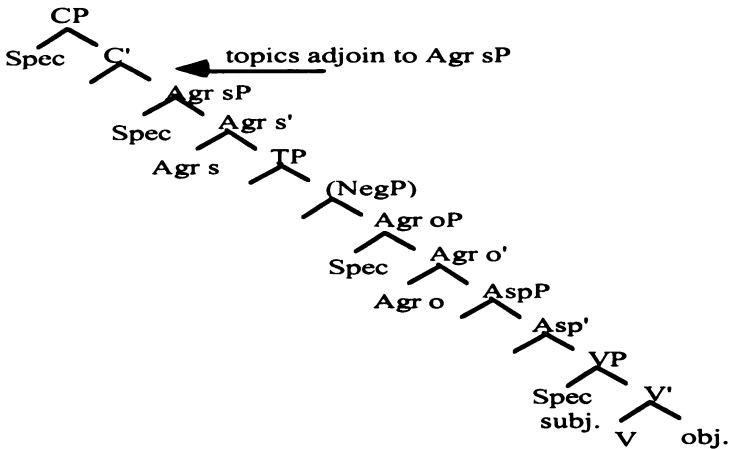
Even a brief introduction to these major approaches addressing the syntax and semantics of individual- and stage-level predication reveals that there is much that is still unknown about the proper syntactic analysis of the two predicate types. The evidence from Colloquial Russian might bear on some of the outstanding controversies.

4 Analysis

4.1 Theoretical assumptions

- Principles and Parameters framework with some ideas from the Minimalist Theory (Chomsky 1993)
- The Split INFL Hypothesis
- Following Junghanns & Zybatow (forthcoming), I assume that the functional structure of Russian clauses is as in (26):

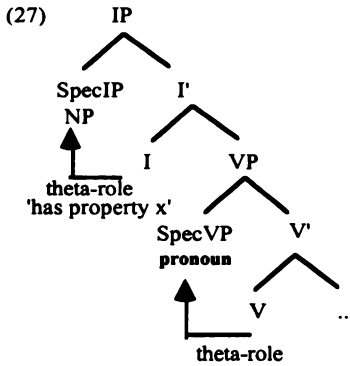
(26)



4.2 Pronoun, not PRO

Following Kratzer and Diesing's insights, I assume that the stage-level structures in Russian are identical to Diesing's (21). The structure for ILPs is basically the same as Diesing's (22), with one

important difference being that it is the pronoun, and not PRO, that is generated in SpecVP:



There are some theoretical advantages of generating a pronoun, and not PRO, in SpecVP with ILPs. First, the problem of un-governed PRO disappears. Both the NP in SpecIP and the pronoun in SpecVP are properly governed and have distinct theta-roles: I assigns a thematic role of "has property x" to the NP and V assigns a distinct thematic role to the pronoun. Second, the alternation between overt pronouns and *pro* might shed light on why pronoun doubling in Colloquial Russian appears optional.

4.3 D-Structure of ILPs

I further assume that the individual-level subject and object NPs originate in SpecAgr_{S/O} respectively.⁹ They are coreferential with pronouns which are generated in SpecVP (for the subject pronoun) and as a sister of V (for the object pronoun). An example of subject doubling is given in (28) and its D-structure is illustrated in (29). Examples (30 -31) provide a similar illustration of object doubling:

⁹ It was suggested to me by Steven Franks that individual-level subject/object NP can be alternatively treated as originating in the (internal) topic position (i.e., adjoined to SpecAgr_SP). This would account for the non-obligatory nature of pronoun cliticization. However, this interesting idea should be tested in order to find out whether the nominals that are base-generated as adjoined to SpecAgr_SP are still in the scope of the Generic operator.

(28) **Deti oni ljubjat životnyx.**
 Children-NOM they-NOM love animals-ACC
 ‘(The) children love animals.’

(29) [SpecAgr sP **Deti** ...[SpecVP **oni** [V ljubjat [NP životnyx]]]]

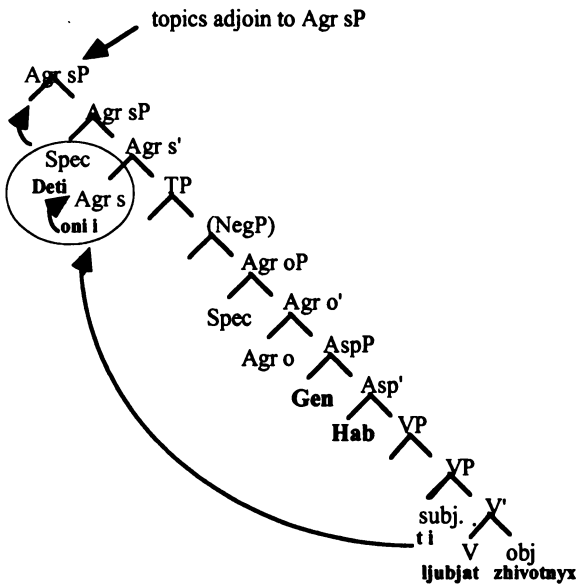
(30) **Viktora ego vse uvažajut.**
 Viktor-ACC him-ACC all-NOM respect.
 ‘All (people) respect Viktor.’

(31) [SpecAgr oP **Viktora** ...[SpecVP vse [V uvažajut [NP **ego**]]]]

4.4 *Deriving S-Structure*

I propose that the pronouns move to their respective Agr_{S/O} positions and cliticize to the NPs. For pragmatic reasons, NPs with cliticized pronouns move to the topic position (adjoin to SpecAgr_S). The derivation for (30) is presented in (32):

(32)



4.5 The Problem of Case Assignment

Case options for object doubling are shown in (33a-b). In (33a) (given as (12) above) the left-most nominal bears the Instrumental Case, the same Case as its coreferential pronoun, while in (33b) the doubled nominal is in the default Nominative Case:

(33a) **Viktorom im vse vosxiščajutsja.**
 Viktor-INSTR him-INSTR all-NOM are-delighted-with
 'All (people) are delighted with Viktor.'

(33b) **Viktor im vse vosxiščajutsja.**
 Viktor-NOM him-INSTR all-NOM are-delighted-with
 'All (people) are delighted with Viktor.'

Case options for doubled objects are summarized in Table 1, where the last row reflects the optionality of pronoun doubling. (I assume that the null argument is represented by *pro*.)

Table 1 Case options for object doubling:

NP Case	Pronoun Case
NOM	non-NOM
non-NOM a	non-NOM a
non-NOM	<i>pro</i>

It can be observed that the primary case assignment is to the pronoun. The case on the sentence-initial nominal is derivative: either default NOM or matching the pronoun's. Example (33c), which has the reverse Case distribution (the nominal is in the Instrumental and the pronoun is in the Nominative Case), is ungrammatical:

(33c) ***Viktorom on vse vosxiščajutsja.**
 Viktor-INSTR he-NOM all-NOM are-delighted-with

However, the object NP must be marked for (non-NOM) Case when these features are not identifiable from the overt pronoun. In (33d) the nominal cannot be in the default NOM:

(33d) ***Viktor vse pro vosxiščajutsja.**
 Viktor-NOM all-NOM are-delighted-with

So, what would be a possible scenario for Case and theta-role assignment? In the Principles and Parameters framework it can be assumed that V assigns Case and a theta-role to pronouns, under government and Spec-Head agreement, while Case and theta-role assignment to doubled NPs is problematic.

Within the Minimalist Theory a tentative scenario would be the following: Case-marked pronouns are inserted under the corresponding nodes within the VP projection. Case-marked NPs are inserted into the corresponding SpecAgr nodes. The derivation crashes if the coreferential NPs and pronouns do not have matching features. It is still to be determined why object NPs have a choice of being either in the default NOM or matching the pronoun in case.

It seems that the insertion of Case-marked NPs into SpecAgr_{S/O} positions with ILPs is somehow licensed by the presence of the generic operator. (The details, however, remain to be worked out.) Also, it is still unclear what role Gen plays in assigning theta-roles to doubled NPs.

To summarize what has been said so far, under the current analysis, both subject and object doubling are accounted for. Subject and object NPs are base-generated in SpecAgr_{S/O} respectively. They are coreferential with pronouns which originate in SpecVP for subjects and as a sister of V for objects. Pronouns cliticize into NPs by S-Structure.

The next section presents some additional data demonstrating that pronoun doubling in Colloquial Russian is not actually limited to ILPs.

4.6 *Generic Operator: Same as Universal Quantifier?*

Consider Chierchia's (1995) proposal that the generic operator is a (modalized) quantifier. So, if pronoun doubling occurs with ILPs (which have Gen built into their structure), can it also take place in universally quantified constructions? The answer is affirmative.

Example (34) is a sentence with a SLP, which does not allow doubling either for subject (34b) or for object (34c):

- (34a) **Alla** včera ela moroženoe.
 Alla-NOM yesterday ate ice-cream-ACC
 'Alla ate (was eating) ice cream yesterday.'

- (34b) ***Alla ona včera ela moroženoe.**
 Alla-NOM she-NOM yesterday ate ice-cream-ACC
 ‘As for Alla, she ate (was eating) ice cream yesterday.’
- (34c) ***Moroženoe ego Alla včera ela.**
 ice-cream-ACC it-ACC Alla-NOM yesterday ate
 ‘As for ice cream, Alla ate (was eating) it yesterday.’

Example (35) is a sentence with an ILP where subject doubling as in (35b) is much preferred to object doubling as in (35c):

- (35a) **Alla ljubit moroženoe.**
 Alla-NOM loves ice-cream-ACC
 ‘Alla loves ice cream.’
- (35b) **Alla ona ljubit moroženoe.**
 Alla-NOM she-NOM loves ice-cream-ACC
 ‘As for Alla, she loves ice cream.’
- (35c) **??Moroženoe ego Alla ljubit.**
 ice-cream-NOM/ACC it-ACC Alla-NOM loves
 ‘As for ice cream, Alla loves it.’

Example (36) demonstrates that in a sentence with an ILP and a universally quantified subject, object doubling is completely grammatical (notice a sharp contrast with (35c)):

- (36) **Moroženoe ego vse ljubjat.**
 ice-cream-NOM/ACC it-ACC all-NOM love
 ‘As for ice cream, everybody loves it.’

Furthermore, in a sentence like (37), which contains a SLP and a universally quantified subject, object doubling is also allowed:

- (37) **Moroženoe ego včera vse eli.**
 Ice-cream-NOM/ACC it-ACC yesterday all-NOM ate
 ‘As for ice cream, everybody ate it yesterday.’

Example (38) similarly demonstrates that subject doubling is grammatical in sentences with SLPs and universally quantified objects:

- (38) **Alla ona včera s'ela vsě moroženoē.**
 Alla-NOM she-NOM yesterday ate all ice-cream-ACC
 'As for Alla, she ate all the ice cream yesterday.'

Interestingly, object doubling is also possible in stage-level constructions with subjects whose universally quantified reading is contributed by the implicature of *daželi* 'even,' as in (39a). Similar conditions hold for subject doubling, as in (39b):

- (39a) **Moroženoē ego daželi Alla včera ela.**
 ice-cr.-NOM/ACC it-ACC *even* Alla-NOM yesterday ate
 'As for ice cream, even Alla ate it yesterday.'
- (39b) **Alla ona daželi moroženoē včera ela.**
 Alla-NOM she-NOM *even* ice-cream-ACC yesterday ate
 'As for Alla, she ate even ice cream yesterday.'

As shown by Fauconnier (1975), *even* implicates a so-called "scalar model" which has the following semantic property: the extreme endpoint of the scale is picked out. For example, in (39a), Alla is the least likely person (of the group of people under consideration) to have eaten ice cream. If she ate it, everybody else did, too. Fauconnier points out that constructions with *even* have special (contextual) entailment. (Cf. Kay 1990/1997.)

There are other expressions that might have an "end of scale" interpretation: *tol'koliš* 'only,' superlatives like *samyj* 'the most,' quantificational adjectives like *celyj* 'whole,' colloquial particles *až/už* 'even,' and others. Some examples are given in (40–41):

- (40) **Moroženoē ego tol'koliš' Alla**
 Ice-cream-NOM/ACC it-ACC *only* Alla-NOM
 včera ela.
 yesterday ate.
 'As for ice cream, only Alla ate it yesterday.' (It was so bad)
- (41) **Viktoru emu samaja otčajavšajasja**
 V-DAT him-DAT *the most* desperate

ženščina ne pozvonit.
 woman-NOM not call.

‘As for Viktor, THE MOST desperate woman won't call him.’
 (Situation: Viktor is very unpopular with women.)

It is interesting that the “end of scale” operator has scope only inside its own CP, as demonstrated by (42a,b):

(42a) *Inna dumala (čto) moroženoe ego*
Inna-NOM thought (that) ice-cream-NOM/ACC it-ACC
daže/i Alla včera ela
even Alla-NOM yesterday ate

‘Inna thought (that) as for ice cream, even Alla ate it yesterday.’

(42b) **Inna ona dumala (čto) daže/i Alla*
Inna-NOM she-NOM thought (that) even Alla-NOM
včera ela moroženoe.
yesterday ate ice-cream-ACC

‘As for Inna, she thought (that) even Alla ate ice cream yesterday.’

Thus, the data point towards similarities between the Gen-operator and universal quantification (which can be either expressed overtly or implied, as in constructions with an “end of scale” operator).¹⁰ The semantics and pragmatics of these constructions deserve more research.

¹⁰During the discussion session at FASL6 an issue of “strong” versus “weak” determiners was raised: doubling of an argument also seems to be possible when another argument is in the scope of a “strong” determiner, like *mnogie* ‘many’, as shown in (i), while it is ungrammatical in sentences containing “weak” DPs like *nekotorye* ‘some,’ as illustrated in (ii):

- (i) **Moroženoe ego včera mnogie (gosti) eli.**
 Ice-cream-NOM/ACC it-ACC yesterday many (guests)-NOM ate.
 ‘As for ice cream, many (guests) ate it yesterday.’
- (ii) ***Moroženoe ego včera nekotorye (gosti) eli.**
 Ice-cream-NOM/ACC it-ACC yesterday some (guests)-NOM ate.
 ‘As for ice cream, some (guests) ate it yesterday.’

5 Conclusion and Directions for Future Research

To summarize, pronoun doubling in Colloquial Russian seems to be sensitive to the following phenomena: a) ILPs with overt quantificational adverbs like *always*, *generally*; b) ILPs whose structure contains a covert Gen-operator, as suggested in Chierchia (1995); c) structures with (overt) universal quantifiers; d) structures containing the "end of scale" operator or other expressions that are construed as the end of a scale. These findings might suggest a possibility of some super-ordinate quantificational category that licenses pronoun doubling constructions in Colloquial Russian.

Future research might proceed in the following directions:

- analyze the discourse properties of pronoun doubling;
- provide a more detailed semantic account of this construction;
- explore the mechanisms of pronoun cliticization in more detail;
- discuss the accounts of clitic doubling in other Slavic (Bulgarian, Macedonian, Serbo-Croatian, Polish, and others) and non-Slavic languages (for example, French, Romanian, Haitian, Catalan, Irish) and explore possibilities of cross-linguistic generalizations regarding clitic doubling and the ILP/SLP contrast.

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'Avoid Conjunction,' Adjunction, and the 'Coordination of Likes Constraint'*

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Both Serbo-Croatian (SC) and English data regarding conjunction repetition point to the need to invoke an Economy principle on conjunction iteration, similar in nature to the 'Avoid Pronoun' principle, namely, 'Avoid Conjunction.' It will be argued that it is this principle that is responsible for the fact that adverbial adjuncts are normally (but not necessarily!) realized without an overt conjunction. This same principle will also be shown to capture the contrasts usually attributed to the Coordination of Likes Constraint.

1. Conjunction Doubling

By Conjunction Doubling (CD) I will refer to the repetition of the conjunction in front of all conjuncts, including the first, which strategy is available in SC and many other languages (see Payne 1985, Kayne 1994 and Progovac 1997a, to appear for additional languages and discussion). In this paper, I only consider the conjunction *and*:

- (1) (I) Nada i Milan crtaju drvo.
and Nada and Milan draw tree
'(Both) Nada and Milan are drawing a tree.'

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The CD strategy with *and* in SC necessarily receives the interpretation SEPARATELY (as does *both* in English), while the use of one conjunction may imply TOGETHER (see Payne (1985) for cross-linguistic convergence on this).

When used attributively, adjectives can be coordinated without an overt realization of a conjunction (the so-called "asyndetic" coordination), as illustrated for English and SC in (2a) and (4a) respectively. When used predicatively, on the other hand, adjectives can only be coordinated "syndetically," that is, with an overt conjunction, as illustrated in contrasts (3a) and (3b) for English, and (5a) and (5b) for SC. If the conjunction is nonetheless used with attributive adjectives, the interpretation is: *both big and red*, as in (2b) from English and (4b) from SC. Rather curiously, with attributive adjectives the English *both* strategy is unacceptable (2c), and so is the SC doubling strategy (4c):

- (2) a. I ate a big, red apple.
 b. I ate a big **and** red apple.
 (apple that is BOTH big and red)
 c. *I ate a **both big and** red apple.
 (cannot mean apple which is both big and red)
- (3) a. ?*This apple is big, red.
 b. This apple is big **and** red.
 c. This apple is **both big and** red.
 (apple is BOTH big and red)
- (4) a. Pojela sam veliku, crvenu jabuku. (SC)
 b. Pojela sam veliku **i** crvenu jabuku.
 (both big and red)
 c. *Pojela sam **i** veliku **i** crvenu jabuku.
 (cannot mean one apple which is both big and red)
- (5) a. ?*Ova jabuka je velika, crvena. (SC)
 b. Ova jabuka je velika **i** crvena.
 c. Ova jabuka je **i** velika **i** crvena.
 (apple is both big and red)

The use of *both* in English and conjunction doubling (CD) in SC seem to be two different strategies used to achieve the same ends.

Surprisingly, the data show that the meaning is not necessarily associated with the lexical item that seems to carry such meaning. Thus *both* does not surface, and cannot surface, in (2b & 2c), yet the meaning intended is that of *both*. In the next section I propose that the data in (2) through (5) reveal a pattern that can be explained in terms of an Economy principle.

2. Conjunctions and Economy

Suppose that the use of overt conjunctions is regulated by an Economy Principle in (6); for appeal to Economy as a principle of Grammar, see Chomsky 1995, for example:¹

1 The 'Avoid Conjunction' principle in (6) is obviously reminiscent of Chomsky's (1981) 'Avoid Pronoun Principle.' In a pro-drop language, such as Serbo-Croatian, an overt bound pronoun will be ungrammatical, unless used for contrast or emphasis. In fact, both "avoid" principles are reducible to Pesetsky's (to appear: 8) soft constraint in the framework of Optimality Theory (OT):

(i) Telegraph: Do not pronounce function words.

In a GB/Minimalist framework, one would say that the Economy principle in (i) interacts with other principles in such a way that it applies only given a choice:

(ii) A functional element is only pronounced if it is required by some principle of Grammar.

For example, in English, a non-pro-drop language, the overt realization of the pronoun is required by virtue of the pro-drop parameter, and the principle in (i) does not apply. In SC, however, an overt pronoun will result in emphasis.

Emphasis in English will then have to be achieved through different means, in fact, also phonologically: by assigning extra stress.

(iii) Maryi thinks that she_i is smart (not somebody else).

In a sense, emphatic stress counts as double pronunciation. It is remarkable that this Economy approach, which avoids pronunciation of functional elements, can unify two phenomena that seem so different in nature: Avoid Pronoun and (Avoid) Emphatic stress.

A similar effect can be achieved by emphasizing conjunctions, as in (iv), which can be interpreted as *Not only Tim, but Peter as well/Both Tim and Peter came to the party*:

(iv) Tim **and** Peter came to the party.

(6) Avoid (Overt) Conjunction

- a. If no coordination marker is necessary, do not use any.² Using one will necessarily induce a marked *both-and* interpretation, if pragmatically possible; using two will generally result in ungrammaticality.
- b. If one coordination marker is required, do not use two. Using two in this case will necessarily induce a marked *both-and* interpretation.

Given (6), we can see the pattern above in the following light: the use of one conjunction already induces a *both-and* interpretation in (2b) and (4b), and thus it is impossible to use *both* in English (2c) or doubled conjunction in SC (4c). In predicative positions, on the other hand, the use of *both* (3c) and doubled conjunction (5c) is possible because the reading of *both* is not induced by one conjunction.

One may wonder what the meaning of (2a) is, if not that the apple is both big and red. Suppose, tentatively, that the contribution of *both* or the CD strategy is to highlight each conjunct as a SEPARATE participant in an event or state. Thus, it is possible to modify (7) with *separately/together/each*, but not (8) (see Gleitman 1965, Lakoff and Peters 1969, Dik 1972 and Seely 1992 for various tests that distinguish the two kinds of readings):

- (7) Mary and Peter (each) drew a tree (separately/together).
- (8) Both Mary and Peter (*each) drew a tree (*separately/
*together).

Where no extra marker is used (7), the principle does not apply, and the phrase seems neutral: conjuncts can be either separate or joint participants in an event, allowing of further specification. On the other hand, the *both-and* construction (8) is already marked for the each/separately reading, and thus addition of the modifiers results either in (costly) redundancy or contradiction.

² I use the term "coordination marker" to cover both conjunctions and quantifiers that play important roles in coordination: both, either, neither.

On the other hand, with adjectival modification, an extra conjunction enforces the reading where each adjective is a separate and independent participant/predicate describing the nominal *apple*. Thus, (2b) is not interpretable as *the red apple that is big*, but only as *the apple that is big and that is red*. On the other hand, (2a) permits the former interpretation.

Parsons (1990:48-49) brings up the question of the interpretation of examples that make use of conjunctions when none is necessary. While iterated modifiers of a single verb give rise to conjunctions of predicates of the same event, he tentatively concludes that explicit surface conjunctions of modifiers have readings that permit multiple underlying quantification over events:

- (9) They met in a park in a cabin. (one event)
- (10) They met in a park and in a cabin. (possibly two events)

Perhaps this can then be seen as the contribution of an extra conjunction: to enforce the readings of separate events.

One may also explore the possibility that appositives are coordination structures with a necessarily zero conjunction, in which case one would have a three-way economy hierarchy below, corresponding directly to the amount of event structure associated with each example:

- (11) The President, Bill Clinton, drew a tree.
(one participant; one event)
- (12) The President and Bill Clinton drew a tree.
(two participants; one or two events)
- (13) Both the President and Bill Clinton drew a tree.
(two participants/two events)

Suppose that the following 'Minimal Effort' principle is a corollary of (6):³

³ It is beyond the scope of this paper to consider if and how the principles in (6) and (14) might carry over to other functional words, such as complementizers (the question raised by Željko Bošković). Obviously, they would not carry over

(14) 'Affect Event Minimally'

Each extra (overt) conjunction will affect the event structure, but in incremental steps, that is, as little as possible.

If the discussion of the examples in (11-13) is on the right track, their interpretation will follow from (14). With no conjunction (11), only one event and one agent are conceivable. With one conjunction (12), by force of (6), the interpretation of the event must be affected. It stands to reason that the event structure is affected less by introducing a new participant than by introducing a new event. Introducing an additional participant may or may not result in two events, rendering (12) vague in this respect. With yet another additional conjunction (13), on the other hand, the two participants must distribute over two separate events.

Although the exact formulation of (14) will have to await further research, the line of reasoning seems promising. Both (6) and (14) are very simple and general principles that ultimately reduce to Economy. All they say is basically: a) if you are going to use extra material, you are going to affect interpretation of event structure; b) each extra piece can only affect event structure minimally. But taken together, the two principles cover an amazing amount of otherwise surprising contrasts, as will become clear in the sections to follow.

3. Adjunction as (asyndetic) coordination

In Davidson 1967 and subsequent extensions, such as Parsons 1980, 1990, Dowty 1989, Higginbotham 1985, Takahashi 1994, adverbials are analyzed as predicates of events, as illustrated in (16) for (15). In English, an overt conjunction can introduce the adverbial, as in (17). In SC, both an overt conjunction and what looks like an event pronoun/demonstrative can surface, as illustrated in (18).

in exactly this form. There is reason to believe, however, that the investigation of other 'optional' function words along Economy lines may be fruitful, too, for example (*either*)-*or* or *if*-(*then*) correlatives.

- (15) John read the book avidly.
 (16) $\exists e (R(j,b,e) \ \& \ (A,e))$
 (17) John read the book and avidly.
 (18) Jovan je pročitao knjigu, i to žedno.
 John is read book and that thirstily

In SC the overt conjunction with an adverbial is necessarily accompanied by what seems to be an overt counterpart of the event variable *e*, which is exactly in the right position to serve as an argument of the predicate *avidly*.⁴ In fact, the highlighted part of the formula in (16) is mimicked, piece by piece, by overt entities in SC (18).

Among its other uses, *to* can act as a demonstrative introducing a single event, which involves existential quantification, as in (19).⁵ Without *to*, the sentence does not necessarily imply one event of swimming; it can also have the meaning involving an individual-level predicate, roughly, Mary can swim.

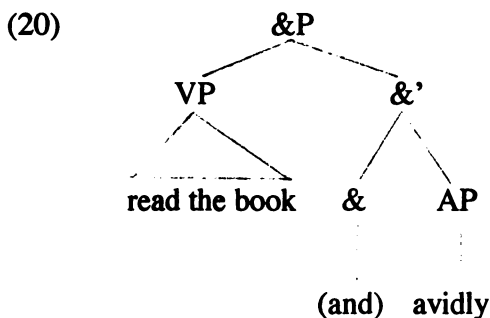
- (19) To Marija pliva.
 That Mary swims
 ‘That is Mary swimming.’/‘What you see is Mary swimming.’

I will propose that the adverbial is necessarily associated with a Conjunction Phrase (&P), with an optional realization of conjunction (for proposals that conjunctions head phrases, see Thiersch 1985, Munn 1987, Collins 1988, etc.):

4 In fact, Bulaxovskij (1938) described the pronoun *èto* in Russian as "a sort of subject whose predicate is the whole clause" (as translated and quoted by Junghanns (1977)). The following Russian example illustrates (from Junghanns 1977:172), where the bracketing indicates that *èto* is associated with the whole clause:

- (i) Èto [vas kto-to obmanul].
 èto you-ACC someone-NOM took-in
 ‘Someone took you in.’

5 See Browne (1975, 1976) for more examples of this kind and for discussion of clitic placement with respect to *to*.



In addition to capturing the mysterious appearance of conjunction in (17-18), the proposed analysis eliminates the exceptional, exocentric nature of Chomsky-adjunction and brings adjunction into line with the rest of X'-theory. What has traditionally been treated as adjunction would then be coordination with the silent coordination head.⁶

I am aware of two alternative explanations for the appearance of the conjunction in (17-18): (i) to argue that *the book and avidly* are coordinated syntactically in a single conjunction phrase; (ii) to argue that *and* coordinates clauses with subsequent deletion/ellipsis. The problem for (i) is that the string *the book and avidly* does not form a syntactic unit, and cannot be topicalized, as pointed out in Zoerner (1995):

(21) *The book and avidly John read.

Zoerner leaves the question of constituency open, due to examples like (22), in which the string can serve as an answer to a question. However, examples like (23) undermine this argument: here an obvious non-constituent can serve as an answer to the question:

6 Željko Bošković points out, correctly, that all the approaches that analyze adjuncts as conjoined to the main predicate face a problem with the fact that extraction out of VP in (20) is possible, although, generally, extraction out of conjuncts is prohibited.

It is worth mentioning that Haik (1985) and Williams (1990) also analyze adjuncts in parasitic gap constructions as conjuncts, thus unifying ATB extraction with coordination and adjunction (but see Postal 1994 for criticism).

- (22) What did John read? A book, and avidly!
 (23) Who read the book? Mary, and avidly!

As for the ellipsis account (ii), it proves too permissive on closer examination. First, it would wrongly permit the opposite ordering of adverbial and direct object (24) to be generated from the underlying (25). Next, it would allow the unattested (26) to be generated from the underlying (27):

- (24) *John read avidly and the book.
 (25) ?John read avidly and *John read* the book.
 (26) *John both read the book and avidly.
 (27) John both read the book and *he read (it)* avidly.

According to the analysis explored here, (24) is out for the same reason (28) is out: the adverbial must follow the object:

- (28) *John read avidly the book.

On the other hand, the contrast between (26) and (27) follows from the 'Avoid Conjunction' principle formulated in (6): while no conjunction is necessary to introduce the adverbial in (26), one conjunction is necessary to connect clauses in (27). Clauses can therefore have two conjunction markers (*both-and*) to express marked focus interpretation (*Not only did John read the book, but he read (it) avidly*), while phrasal coordination can use only one connective for the same focus interpretation, as in (17).

In fact, the clause reduction analysis is also unable to handle the following examples brought up by Sag et al. (1985):

- (29) You can depend on my assistant and that he will be on time.
 (30) *You can depend on that he will be on time.
 (31) Pat was annoyed by the children's noise and that their parents did nothing to stop it.
 (32) *Pat was annoyed by that their parents did nothing to stop it.

The problem here is that the second conjunct cannot be licensed without the first conjunct. If the second conjuncts in (29) and (31) are licensed as phrases in a &P, then there is no expectation for (30) and (32) to be grammatical. This discussion also implies that unlike phrases can be coordinated, as will be argued in the following section.

4. Coordination of Likes Constraint (CLC)

Importantly, the 'Avoid Conjunction' principle in (6) can capture the basic contrasts that are usually ascribed to 'Coordination of Likes Constraint' (CLC). On the basis of contrasts like (33) and (34), Chomsky (1957) concludes that constituents of different kinds cannot be conjoined:

- (33) the scene [PP of the movie] and [PP of the play]
 (34) *the scene [PP of the movie] and [CP that I wrote]

Given 'Avoid Conjunction,' the analysis of the contrast in (33)-(34) suggests itself: (33) is acceptable because the conjunctionless counterpart (35) is not; (34) is out because the conjunctionless counterpart (36) is available:

- (35) *the scene [PP of the movie] [PP of the play]
 (36) the scene [PP of the movie] [CP that I wrote]

Theoretical advantages of reducing the CLC to an Economy principle should be clear: Both Economy in general, and 'Avoid Conjunction' in particular, have an independent theoretical and empirical status; the CLC does not.⁷

⁷ As pointed out to me by Željko Bošković, by eliminating the CLC, I seem to lose an explanation for (i) below. Examples like (i) can be ascribed to the CLC, e.g. by Schachter (1977:90), who argues that "the constituents of a coordinate construction must belong to the same syntactic category and have the same semantic functions" (emphasis mine).

- (i) *John and a stone broke the window.

Below are more examples from the literature that can be reduced to 'Avoid Conjunction.' The a) of each pair illustrates an ungrammatical instance of coordination; the b) example offers the reason in terms of 'Avoid Conjunction': that is, the conjunctionless counterpart:

- (37) a. *John probably and unwillingly went to bed.
(Gleitman 1965)
b. John probably went to bed unwillingly.
- (38) a. ?*John ate with his mother and with good appetite.⁸
(Gleitman 1965)
b. John ate with his mother, with good appetite.

Schachter himself shows that just purely semantic considerations do not suffice, as the following contrast illustrates:

- (ii) Bobby is the man who was defeated by Billie Jean and who beat Margaret.
(iii) *Bobby is the man defeated by Billie Jean and who beat Margaret.

But to require both syntactic and semantic likeness is just too strong a condition, that cannot survive the test posed by the examples like (29-32) above or (42-49) below (see also Zoerner 1995). Instead, it seems that some times we need to appeal to semantic likeness, while other times, we need to appeal to syntactic likeness. This leaves the notion of 'likeness' without a formal linguistic characterization.

What this means is that the ungrammaticality of (i) is not really captured by the CLC, and that the elimination of the CLC constitutes no loss with respect to the explanation of examples like (i).

One possibility to explain the ungrammaticality of (i) is to say that the two noun phrases cannot both be moved to the subject position unless they are generated as a unit. If they were both generated in the Spec of VP, then they would both necessarily receive the same theta-role, which is exactly what seems to be wrong with this example. In contrast, theta-roles are not assigned to the VP and the adverbial in (20), which are both predicates. Actually, a more flashed-out structure may be needed to capture the predication relationships in (20), which I address in another paper Progovac (1997b).

⁸ Examples (38a) and (41a) are acceptable on a marked interpretation only, which involves event-complexity, to be subsumed by the 'Affect Event Minimally' principle in (14).

- (39) a. *the book [that I read] and [about the war].
 b. the book that I read about the war
- (40) a. *I sat [on the couch] and [with fever].
 b. I sat on the couch with fever.
- (41) a. ?*John met Mary on a blind date and in 1968.⁸ (Schachter 1977)
 b. John met Mary on a blind date in 1968.

On the other hand, examples of possible coordination given in (a) below normally do not license both conjuncts *asyndetically*, as shown in (b):

- (42) a. Pat has become a banker and very conservative. (Sag et al. 1985)
 b. *Pat has become a banker very conservative.
- (43) a. Robin is ugly, a dolt and of no help. (Zoerner 1995)
 b. ?*Robin is ugly, a dolt, of no help.
- (44) a. Robin considers Kim completely evil, a total witch, and beyond salvation. (Zoerner 1995)
 b. ?*Robin considers Kim completely evil, a total witch, beyond salvation.
- (45) a. [NP Robin's help] and [CP that (s)he gave it so willingly] delighted Kim. (Zoerner 1995)
 b. *Robin's help that she gave it so willingly delighted Kim.
- (46) a. Robin realized [CP that the sky was falling] and [NP the gravity of the situation]. (Zoerner 1995)
 b. *Robin realized that the sky was falling, the gravity of the situation.
- (47) a. John and Peter arrived late.
 b. *John, Peter arrived late.
- (48) a. John wrote and read a poem for Mary.
 b. *John wrote, read a poem for Mary.

It has been argued by John Bowers (1993; 1997 LSA Institute class lectures) that every predicate projects a Predication Phrase (PrP) in which the external argument is generated. Examples (42-44) could then be captured by the CLC by arguing that PrPs coordinate in these examples (see Sag et al. 1985 for the proposal that unspecified

XPs coordinate here). However, it turns out that in those cases in which Pr has an overt realization (*as* in English), it need not (or cannot) be repeated in a conjunction of non-likes:

- (49) Robin regards Kim as completely evil, (?*as*) a total witch, and (??*as*) beyond salvation.

This is a strong argument against the CLC. Even when the choice of coordinating likes is available, as in (49), the grammar prefers not to use it. Of course, one can claim that below PrPs there may be some other functional projections, such as AgrPs, which then coordinate. As far as I can see, this claim is unfalsifiable, given our understanding of structure so far. The burden of proof therefore must rest on those who make this claim. The proof will consist in showing, first, that there is such a projection; and, next, that it must be that projection that is involved in coordination. In the meantime, I will assume that there is no special condition on coordination, such as the CLC. Coordination phrases are just like any other phrases, and for no other phrase is it true that its specifier and complement are subject to a “like” constraint. The effects of other principles of Grammar, primarily 'Avoid Conjunction,' conspire to give the illusion of the CLC.

5. Conclusion

Adjunction seems X'-exceptional in that it is not headed; coordination seems X'-exceptional in that it does not allow XPs of different types in specifier and complement positions (hence the stipulative 'Coordination of Likes Constraint'). But if the two are collapsed into a single phenomenon, both become unexceptional: Adjunction is now headed by a silent conjunction, while the most common case of "unlike" coordination is that of adjunction.

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On the Placement of Serbo-Croatian Clitics: Evidence from Clitic Climbing and VP ellipsis *

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In this paper I present evidence against the syntactic accounts of the second position effect in Serbo-Croatian (SC) (see, among others, Franks and Progovac 1994, Wilder and Ćavar 1994a, Progovac 1996, Roberts 1994, Halpern 1992, 1995, Schütze 1994). Most of these accounts crucially assume that in overt syntax SC clitics are found in a cluster adjoined to each other and very high in the tree, allowing enough space for at most one element to precede them. I show, however, that in overt syntax clitics need not be adjoined to each other. Each clitic may be located in a separate maximal projection. The evidence for this state of affairs comes from the behavior of clitics in clitic climbing and VP ellipsis constructions. I further show that the facts presented in this paper fit nicely into Bošković's (1995a, 1995b, 1997a, 1997b) account of the second position effect.

1 The Second Position Clitic Effect in Serbo-Croatian

SC clitics are found in the second position of their sentence, which is standardly defined as either after the first word or after the first constituent of the sentence (see Browne 1975). This is illustrated in (1).¹

- (1) a. Tu knjigu *su mi* dali.
 that book-ACC are me-DAT given
 'They gave that book to me.'

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¹ Throughout the paper all clitics will be italicized.

- b. Tu *su* *mi* knjigu dali.
 that are me-DAT book-ACC given
 ‘They gave that book to me.’

The sequence of clitics within a cluster conforms to the general pattern in (2):

(2) li-AUX-DAT-ACC-je

The question particle *li* is always initial, auxiliaries immediately follow except the third person singular auxiliary *je* ‘is’, which appears finally. Pronominal clitics follow auxiliary clitics (except *je*), with a dative clitic preceding an accusative clitic.

Locating clitics in any other position than second position leads to ungrammaticality, as illustrated in (3).

- (3)a. *Mi Marijinoj prijateljici *smo* *ga* dali.
 we Marija’s friend-DAT are it-ACC given
 ‘We gave it to Mary’s friend.’
- b. *Mi *smo* Marijinoj prijateljici *ga* dali.
 we are Marija’s friend-DAT it-ACC given
 ‘We gave it to Mary’s friend.’

The sentences in (3) illustrate the second position effect. There have been several lines of analysis proposed in the literature to account for this effect in Serbo-Croatian.

Bošković (1997a) gives the following classification of approaches to second position cliticization in SC. These approaches can be classified as phonological or syntactic:²

(a) The strong syntax approach: Syntax is fully responsible for the phenomenon of second position cliticization in SC. Phonology plays no role in determining the second position of clitics. Some of

² As pointed in Bošković (1997a), there are several other interesting approaches to second position cliticization in SC (Phillips 1996, Anderson 1993, Zec and Inkelas 1990, among others) that cannot be easily assigned to the categories given here, since they differ from the works cited below in some basic assumptions concerning the nature of the phonology-syntax interface and/or lexical insertion of clitics.

the proponents of this approach are Franks and Progovac (1994), Progovac (1996), Roberts (1994), Wilder and Čavar (1994a, b).

(b) The strong phonology approach: Phonology is fully responsible for second position cliticization. This approach relies on heavy word reordering taking place at PF. All clitic placement is accomplished by phonological processes, in particular, by applying Move in phonology. The best known advocate of this approach is Radanović-Kocić (1988, 1996).

(c) The weak syntax approach: Movement of clitics takes place in syntax, but a small amount of word reordering is still allowed to take place in PF. In particular, if clitics are not in the second position in syntax, under certain well-defined conditions they can move to that position in phonology. Some of the advocates of this approach are Halpern (1992, 1995), Embick and Izvorski (1997), Percus (1993), Schütze (1994), and King (1996).

(d) The weak phonology approach: Phonology plays a dominant role in accounting for the second position effect. Under this approach, the second position requirement is a morphophonological requirement on clitics. All relevant movements of clitics take place in syntax. Phonology plays a passive filtering role by ruling out syntactically well-formed sentences which violate this morphophonological requirement. The principal proponent of this approach is Bošković (1995a, 1995b, 1997a, 1997b).

In this paper I present evidence against both the strong and the weak syntactic approach to the second position effect in SC. Common to all syntactic accounts of the second position effect in SC is that they depend on locating clitics in a cluster in a structurally fixed position very high in the tree, usually in C or in a maximal projection just below C, so that there is enough space for only one element to precede the clitic cluster. The only difference between the strong and weak syntactic approach is in the possibility of having no lexical material in front of clitics in overt

syntax. The strong syntax approach does not allow clitics to end up sentence initially in overt syntax. The placement of clitics in second position is done purely syntactically. The weak syntax approach does allow clitics to end up sentence initially in overt syntax. If this happens, the clitic cluster will move in phonology to attach to an appropriate host. This approach still relies on assuming that in overt syntax, clitics must be in a cluster in a fixed structural position high in the tree.

Some facts about the behavior of clitics in clitic climbing and VP ellipsis constructions presented below argue against syntactic accounts. The facts about clitic climbing show that clitics need not cluster together under the same node in overt syntax, i.e. that clitics can be found split in overt syntax. The facts about VP ellipsis show that when clitics seem to be in a cluster, each clitic may still be in a separate maximal projection. Further, they show that the position of clitics cannot be very high in the tree. These new data favor Bošković's (1995a, 1995b, 1997a, 1997b) weak phonology approach.

2 The Evidence

2.1 Clitic Climbing in SC

Progovac (1996) shows that SC verbs fall into two basic groups: those which select opaque complements, or I-verbs (Indicative-selecting verbs), and those which select transparent complements (S-verbs, selecting Subjunctive-like complements). I-verbs are mostly verbs of saying, believing, and ordering, such as *kazati* 'say', *reći* 'say', *tvrditi* 'claim', *pretpostavljati* 'suppose', *vjerovati* 'believe', *narediti* 'order', etc. S-verbs are mainly verbs of wishing and requesting, such as *željeti* 'wish', *htjeti* 'want', *moći* 'be able to', *tražiti* 'ask for', etc. Progovac (1996) shows that clitic climbing is possible out of the complements of S-verbs, while it is not possible out the complements of I-verbs. This is illustrated in (4b) for I-verb complements, and in (5b) for S-verb complements.

- (4) a. Milan kaže da *ga* vidi. (I-verb complements)
 Milan says that him sees
 'Milan says that he sees him.'
- b. * Milan *ga* kaže da vidi.
 Milan him says that sees
 'Milan says that he sees him.'
- (5) a. Marija želi da *ga* vidi. (S-verb complements)
 Marija wants that him see
 'Marija wants to see him.'
- b. ? Marija *ga* želi da vidi.
 Marija him wants that see
 'Marija wants to see him.'

In (4b) the accusative clitic *ga* 'him' climbs to the matrix clause out of the complement of *kazati* 'say' and the sentence is bad. In (5b) the accusative clitic *ga* climbs to the matrix clause out of the complement of *željeti* 'wish' and the sentence is good. (6b) illustrates that climbing the whole cluster out of the complement of an S-verb to the matrix clause is also possible.

- (6) a. Marija želi da *mu ga* predstavi.
 Marija wants that him_{dat} him_{acc} introduce
 'Marija wants to introduce him to him.'
- b. ? Marija *mu ga* želi da predstavi.
 Marija him_{dat} him_{acc} wants that introduce
 'Marija wants to introduce him to him.'

Now consider (7).

- (7) ? Marija *mu* želi da *ga* predstavi.
 Marija him_{dat} wants that him_{acc} introduce
 'Marija wants to introduce him to him.'

In (7), the dative clitic *mu* 'him' climbs to the matrix clause. The accusative clitic *ga* 'him', however, remains in the embedded clause. So, climbing only one clitic, while leaving the other clitic in the embedded clause, is possible.

Note further that the accusative clitic cannot climb over the dative clitic into the matrix clause. Example (8) clearly contrasts with (7).

- (8) * *Marija ga želi da mu predstavi.*
 Marija *him_{acc}* want that *him_{dat}* introduce
 ‘Marija wants to introduce him to him.’

The contrast between (7) and (8) can be interpreted as evidence that the dative clitic is originally in a higher position than the accusative clitic.

For the syntactic approaches this state of affairs in which clitics are split is unexpected. As mentioned before, syntactic approaches assume that clitics are located in a cluster under the same node very high in the tree. Crucially, all clitics in a sentence have to be in a cluster already in overt syntax. So, in (6b), under syntactic accounts, both the dative clitic *mu* ‘him’ and the accusative clitic *ga* ‘him’ must be clustering together in a very high position in the matrix clause. That position is usually C (Franks and Progovac 1994, King 1996, Progovac 1996, Schütze 1994, Wilder and Čavar 1994a,b) or a head position between C and I (Percus 1993, Roberts 1994). The accusative and dative clitic in (6b) must have moved to that position. In the minimalist framework, all movement is driven by feature checking. This means that in (6b), there is a feature that drives movement of both clitics to that high position in the matrix clause. The relevant feature can apparently be optionally present either in the embedded or in the matrix clause. Now, let us look at (7). In (7) only the dative clitic moves to the matrix clause. The accusative clitic stays behind in the embedded clause. Under the assumption that SC clitics cluster together, this state of affairs is unexpected. Given that there is a feature that drives the movement of the accusative clitic to the embedded C, the question is why the dative clitic can skip this position where it can check the relevant feature. Its movement to the matrix clause violates Rizzi’s (1990) Relativized

Minimality or Chomsky's (1995) Minimal Link Condition. I conclude, therefore, that under syntactic approaches, where all clitics in a sentence have to be in a cluster under the same node high in the tree, it is difficult to account for the fact that the clitics can be found split as in (7b).

An even more compelling piece of evidence against syntactic accounts comes from VP ellipsis constructions.

2.2 VP Ellipsis in SC

Serbo-Croatian allows VP ellipsis,³ as illustrated in (9).⁴

- (9) ? Oni *su* kupili novine, a i vi *ste* ~~kupili~~
 they are bought newspapers, and also you are bought
~~novine~~ (takodje).
 newspaper too

'They bought the newspapers, and you did, too.'

Example (9) contains two conjoined clauses. In the first conjunct, the verb is in the past tense, which, in SC, is a periphrastic form composed of a clitic form of the present tense of the auxiliary verb *biti* 'to be' and the past participle of the main verb. In the second conjunct of (9) the VP containing the participle *kupili* 'bought' and the direct object *novine* 'newspaper' is elided. The auxiliary *ste*

³ Following convention, I call the process in question VP ellipsis, although I am open to the possibility that it can affect a maximal projection higher than VP, for example AgroP.

⁴ There is a variation among speakers in acceptance of sentences with clitics preceding an ellipsis site. Out of six native speakers I have questioned, one did not accept any sentence with a clitic before an ellipsis site. In this paper I will focus on my own dialect and the dialects of my informants who accept these sentences. These dialects are spoken in Bosnia. The unacceptability of the relevant structures for some speakers may be related to the often observed phenomenon that sentences degrade when phonologically weak elements precede a trace or a gap (see Sag and Fodor 1995).

'are' is not elided, which means that it is in some position higher than the ellipsis site.⁵

2.2.1 Clitics in VP Ellipsis

Let us now look at sentences involving clitic clusters and VP ellipsis. Consider first the example in (10).

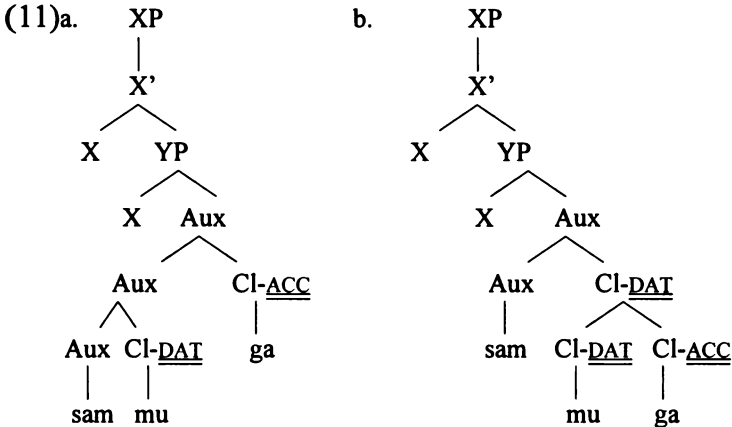
- (10)? *Mi smo mu ga dali, a i vi ste mu*
 we are him-DAT it-ACC given and also you are him-DAT
ga—dali, (takodje).
 it-ACC given too
 'We gave it to him, and you did, too.'

Example (10) contains two conjoined sentences. The verb *dali* 'gave' takes a direct and an indirect object, which are both pronominal clitics. The clitic cluster thus includes a verbal clitic *ste* and two pronominal clitics *mu* and *ga*. In the second conjunct, VP ellipsis has occurred, eliding the participle together with the pronominal clitics. The verbal clitic *ste*, however, remains.

A number of researchers, including Lasnik (1995), Chomsky and Lasnik (1993), and Chomsky (1995), have argued that VP ellipsis is a PF phenomenon targeting structures given by overt syntax. If such an approach to VP ellipsis is adopted, the behavior of SC clitics in VP ellipsis is unexpected under syntactic approaches to second position cliticization. First, in syntactic approaches, as discussed above, the cluster is very high in the tree, much higher than a VP ellipsis site should be. VP ellipsis, therefore, should not be able to affect it. Suppose, however, that the cluster is located within an ellipsis site. Even in this case, eliding some clitics and leaving others behind should not be possible. In syntactic approaches clitics are adjoined to each other. So, in (10), the position of clitics just before the ellipsis occurs is

⁵ See Bošković (1995a, 1995b, 1997b), who argues that SC auxiliaries are base generated in a VP and may undergo overt raising to the head of a functional projection (T or AgrS).

as illustrated in (11a) or (11b), depending on how the adjunction of clitics to one another proceeds.



If only constituents can be elided, as is standardly assumed (see Lasnik 1995), then ellipsis cannot affect only the dative and the accusative clitic (together with YP) in (11), since it would not be affecting a constituent. There is no way of having one clitic left and others elided. Given that the example in (10) is acceptable, the clitic auxiliary and pronominal clitics must then be in different maximal projections.

Further, pronominal clitics themselves may be in different maximal projections, as shown by the contrast between (12) and (13).

(12)? *Mi smo mu ga dali, a i vi*
 we are him-DAT it-ACC given, and also you
ste mu ga—dali, (takodje)
 are him-DAT it-ACC given too
 ‘We gave it to him, and you did too.’

(13)* *Mi smo mu ga dali, a i vi*
 we are him-DAT it-ACC given, and also you
ste mu ga dali, (takodje)
 are him-DAT it-ACC given too
 ‘We gave it to him, and you did too.’

In (12), the accusative clitic is elided, while the dative clitic remains. The possibility of eliding the accusative clitic, without eliding the dative one, suggests that the two clitics are in separate maximal projections. Furthermore, (13) shows that eliding only the dative clitic, while leaving the accusative one behind, is not possible. There is a clear contrast between the sentence in (12) and the sentence in (13). This state of affairs is predicted if the dative clitic is in a maximal projection higher than the maximal projection in which the accusative clitic is located at the point when ellipsis takes place.^{6 7 8}

⁶ I leave open what these maximal projections might be, one possibility being AgrIO and AgrDO.

⁷ Deleting the whole cluster including the auxiliary clitic is not possible, as illustrated in (i), since the auxiliary necessarily raises out of the VP ellipsis site (see Bošković 1995a, 1995b, 1997b).

- (i) *Tu knjigu *su mi* dali, a i vi.
 this book-ACC are me-DAT given, and too you
 ‘They gave me this book, and you did too.’

⁸ Progovac (1997) has a different account of some of the facts discussed here. Progovac argues that the process involved constructions such as (10) is not VP ellipsis. In her judgment, while (10) is grammatical, (12) is ungrammatical. She apparently does not allow leaving any pronominal clitics after the auxiliary clitic in the constructions in question. Based on this, she proposes that no surface deletion rule applies to these data. Instead, according to Progovac, a silent VP *e* is basegenerated in the second conjunct. Progovac assumes that pronominal clitics in SC are generated in the corresponding argument positions within VP, hence they cannot be generated with a silent VP. Auxiliary clitics, on the other hand, are not generated within VP, but rather in a functional projection above VP, so they can surface with silent VPs. There is, however, reason to doubt the claim that the process involved in the example in (10) is not VP ellipsis. Consider the following example:

- (i) Koga je Marija vidjela, a koga je Petar vidio?
 whom is Marija seen, and whom is Petar seen
 ‘Who did Marija see, and who did Peter?’

In the second conjunct of (i), the object *wh*-phrase has undergone *wh*-movement, while the main verb is missing. Now, if the second conjunct contains a basegenerated null VP *e* and does not involve VP ellipsis, and if object phrases cannot be generated with silent VPs, as argued by Progovac (1997), it is not clear how the object *wh*-phrase in the second conjunct of (i) can be generated. On the other hand, under VP ellipsis analysis, (i) is straightforwardly accounted for, since the VP of the second conjunct is present when

Syntactic approaches are not able to account for these facts. In these approaches, clitics crucially must be adjoined to each other in overt syntax. Leaving only one of them within an ellipsis site then should not be possible. If it were possible not to adjoin clitics to each other leaving them in separate maximal projections in VP

wh-movement applies. Further, while it is true that sentences in which pronominal clitics remain together with an auxiliary clitic are somewhat degraded, as illustrated in (ii), such examples improve if the clitics remain together with a non-clitic auxiliary, as illustrated in (iii):

- (ii) ?? *Ja sam mu ga dala, a i ti si mu ga dala, takodje.*
 I am him-dat it-acc given, and you are him-dat it-acc given, too
 'I gave it to him, and you gave it to him, too.'
- (iii) *Ja sam mu ga dala, a ti mu ga nisi dala.*
 I am him-dat it-acc given, and you him-dat it-acc aren't given
 'I gave it to him, but you didn't give it to him.'

The fact that (iii), with the pronominal clitics surfacing and the main verb elided, is grammatical indicates that the process in question is VP ellipsis, and not empty VP basegeneration. The contrast between (ii) and (iii) may lie in the fact that VP ellipsis generally requires a contrast to be completely felicitous. In (ii), where only clitic forms are used, no such contrast can be achieved. Note that even (10) is slightly degraded, because the clitic form, and not the full form of the auxiliary is used. Hence, no contrast can be achieved. Apparently, the degradation is more serious when we have a clause final cluster, than when we have only one final clitic.

Consider also the following data, discussed by Grinder and Postal (1971) and Bresnan (1971).

- (iv) a. I've never ridden a camel, but John has, and he says it was lame.
 b.* I've never ridden a camel, and it was lame.
 c.* I've never ridden a camel, but John did it, and it was lame.

As discussed by Grinder and Postal (1971), the contrast between (iva) and (ivc) shows that (iva) must at some level contain the elided VP, and not simply a null VP without internal structure, a null counterpart of *do it* in (ivc). This is so because in (iva) *it* picks out an antecedent from the elided VP, while in (ivc) it cannot pick out an antecedent from *do it*. (ivb) shows that *it* cannot pick out an antecedent from the first clause. Note now that SC patterns with English in this respect:

- (vii) *Ja nikad nisam jahala kamilu, Ivan jeste, i kaže da pro je šepala.*
 I never am not ridden camel, Ivan is, and he-says that is it-lame
 'I've never ridden a camel, John has, and he says it was lame.'

This 'missing antecedent test' indicates that SC does have VP ellipsis.

For more evidence that (10) involves VP ellipsis, see Stjepanović (1997). Also see Depiante (1997) who argues convincingly that Spanish has null VP generation. SC fails the tests for null VP generation Depiante establishes with respect to Spanish.

ellipsis constructions, the same situation could hold in an equivalent sentence without VP ellipsis. But, then, clitics would be in different maximal projections, and elements (for example adverbs) could intervene between them, counter to fact. I conclude, therefore, that the syntactic approach to the placement of SC clitics cannot be maintained.

Recall that *je* 'is', the third person singular form of the auxiliary *biti* 'be', is the only auxiliary form that appears following pronominal clitics, as illustrated in (14).

- (14) On *mi* *ga* *je* dao.
 he me-DAT it-ACC is given
 'He gave it to me.'

At this point, it would be interesting to see how *je* behaves in VP ellipsis. Let us look at (15).

- (15)? On *mi* *ga* *je* dao, a i ona *je* (takodje).
 he me-DAT it-ACC is given, and too she is as well
 'He gave it to me, and she did, too.'

Example (15) contains two conjoined clauses. In the second conjunct of (15), VP ellipsis occurs. The dative and the accusative clitics are elided together with the participle. The auxiliary *je*, however, remains. Apparently, although on the surface *je* follows pronominal clitics, with respect to VP ellipsis this auxiliary form behaves in the same way as other auxiliary forms in that it precedes pronominal clitics. As a result, pronominal clitics can be affected by VP ellipsis with *je* remaining unelided.

As pointed out to me by Steven Franks (personal communication), this state of affairs can be accounted for if one assumes that in overt syntax, *je* occupies the same syntactic position as other auxiliary forms, preceding pronominal clitics. A low-level morphophonological (PF) rule then moves it to its surface position, which is the position following all other clitics. Crucially, at the point when ellipsis takes place, *je* precedes pronominal clitics, like other auxiliary forms, which makes it

possible to elide pronominal clitics under VP ellipsis with *je* remaining unelided. So, we can conclude that *je* does not disrupt the general pattern of behavior of clitics in VP ellipsis.

We have seen that syntactic approaches cannot account for the ellipsis facts discussed above. There is, however, an approach to the second position clitic effect proposed in the literature that nicely accommodates these facts. This is Bošković's (1995a, 1995b, 1997, to appear) weak phonology approach. Considering facts about participle movement in SC, Bošković shows that SC clitics are not always located in the same structural position, and that they may be located rather low in the tree. Given also the fact that a variety of elements can satisfy the second position requirement by preceding the clitic cluster (subject phrases, topic phrases, *wh*-phrases, verbal heads, complementizers), Bošković concludes that the second position effect cannot be accounted for in purely syntactic terms, and that phonology also plays a role.

Bošković (1995a, 1995b, 1997a, 1997b) further notes that second position cannot mean the second position of the clause, but rather must mean the second position of the clitics' intonational phrase.⁹ Bošković is led to such a conclusion by considering the following constructions from Zec and Inkelas (1990):

- (16) a. U Rio de Žaneiru ostali *su* dve godine
 in Rio de Janeiro stayed are two years
 'In Rio de Janeiro they stayed two years.'
- b. *U Riju ostali *su* dve godine
 in Rio stayed are two years
 'In Rio they stayed two years.'

⁹Radanović-Kocić (1996) similarly proposes that clitics occupy the second position of their intonational phrase. As mentioned above, the main difference between her theory and Bošković's is that in her theory all clitic placement is accomplished by phonological operations, in particular, by applying Move in phonology. For empirical and conceptual inadequacies of such an approach, see Bošković (1997).

In (16a) the clitic does not occur in the second position of its clause, but rather in the third position.¹⁰ The sentence is nonetheless acceptable. In (16b) the clitic is again in the third position of its clause, and the sentence is not acceptable. Following Zec and Inkelas (1990), Bošković (1995a, 1995b, 1997b) argues that the relevant distinction between (16a) and (16b) is that in (16a) the preposed PP is heavy (under Inkelas and Zec's definition of "heaviness"), while in (16b) it is not. It is well-known that "heavy" constituents form separate intonational phrases. The preposed "heavy" PP in (16a) forms a separate intonational phrase, i.e., it is followed by an intonational phrase boundary.¹¹ This is not the case with the "light" PP in (16b). The clitic in (16a) is, thus, correctly in the second position of *its* intonational phrase, while in (16b), it is not.¹²

To account for the descriptive generalization that SC clitics are located in the second position of their intonational phrase, Bošković (1995a, 1995b, 1997b) proposes that the second position effect is a result of lexical properties of clitics which must be satisfied at PF. He proposes the following morphophonological requirements for second position clitics:

- (17)a. #__ (where # is an intonational phrase boundary)
 b. suffix

(17b) requires that SC second position clitics be suffixes, and (17a) requires that they be right adjacent to an intonational phrase boundary. The process of Merger in (18), which Bošković adopts

¹⁰ A number of other researchers have considered examples in which clitics are located in the third position of their clause; see Browne (1975), Čavar and Wilder (1994b), Schütze (1994), Progovac (1996), and Radanović-Kocić (1996), among others.

¹¹ Note that the PP in (16a) is followed by a pause, an overt manifestation of the boundary. In fact, if the pause is not present, the sentence is bad.

¹² For a more detailed analysis, and discussion of questions such as how the theory forces all of the clitics in a clause to be at the left-hand edge of the same intonational phrase, see Bošković (1997b).

in a modified form from Marantz (1989), ensures that there is no conflict between the two requirements in (16). Bošković assumes that for the constructions in question, Merger takes place in PF under PF adjacency.

(18) **Merger**

At any level of syntactic analysis, independent syntactic constituents X and Y standing in a relation at that level (or heading phrases standing in a relation) may merge into a single word, X+Y, projecting the relation between (the constituent headed by) X and (the constituent headed by) Y onto the affixation relation X+Y.

Departing from Marantz, Bošković (1995a, 1997a) crucially assumes that Morphological Merger cannot re-order elements; it simply puts two adjacent elements together, forming a word out of them.¹³

According to Bošković, SC clitics are suffixes and need to be suffixed onto something, but at the same time they have to be right-adjacent to an intonational phrase boundary. When they are merged with a phonologically strong element X, the merged complex can take over any requirement of its “constituents” (X or the clitics). So, in the structure in (19), all clitics merge to X, which, then, takes over all of their requirements, in this case their requirement to be right-adjacent to an intonational phrase.

(19) # X Cl Cl Cl

In Bošković’s account, syntax “proposes” structures to phonology, and phonology filters out or “disposes” those which violate PF requirements. Given such a formulation of the second position effect, in overt syntax clitics need not always be in the

¹³ As such, Merger has a very different status from Prosodic Inversion, advocated by weak syntax approaches. Prosodic Inversion crucially allows word re-ordering in PF. That is, if a clitic cluster ends up sentence-initial in overt syntax, re-ordering can occur in PF, which puts the cluster in the second position. The version of Merger Bošković adopts does not allow this kind of re-ordering.

same structural position high in the tree, and further they need not be adjoined to each other. Each clitic can be (but does not have to be) in a separate maximal projection. Sentences such as (3b), where elements intervene between the clitics, or sentences such as (16b), where the clitic is not adjacent to an intonational phrase boundary, are ruled out by the PF requirements in (17). In particular *ga* in (3b) and *su* in (16b) cannot satisfy (17a) since their host (the element they merge with) is not right adjacent to an intonational phrase boundary.

Recall, also, that in the case of clitic climbing, the clitic cluster can be split, as in (7b). The grammaticality of sentences such as (7b) is straightforwardly accounted for under Bošković's account. In (7b), the dative clitic *mu* 'him' is in the second position of its intonational phrase, while the accusative clitic *ga* 'him' is in the second position of its intonational phrase, as illustrated in (20).

(20) # Marija *mu* želi # da *ga* predstavi.#
 Marija *him_{dat}* wants that *him_{acc}* introduce
 'Marija wants to introduce him to him.'

Constructions such as (21) are still ruled out, although the clitics seem to satisfy the morphophonological requirements in (17).

(21) * #Svojoj najboljoj prijateljici će # dati ga
 her best friend-DAT will give it-ACC
 sutra.#
 tomorrow
 'She will give it to her best friend tomorrow.'

As shown, both clitics are within the second position of their respective intonational phrases, thus satisfying the morphophonological requirements in (17). Bošković (1997) shows, however, that this does not have any undesirable consequence. Sentences such as (21) are already ruled out under the relevant derivation in the syntax. Following standard assumptions concerning intonational phrases, Bošković argues that fronted

heavy constituents, parentheticals and appositives form separate intonational phrases, the boundaries of which coincide with the boundaries of these syntactic constituents. In order to satisfy (18), the clitic must be located within the intonational phrase formed by the fronted NP, given the natural assumption that morphological Merger cannot take place across intonational phrase boundaries. Example (21) then must involve movement of the auxiliary into the fronted NP, as illustrated in (22).

(22) * #_[NP]Svojoj najboljoj prijateljici će] # dati ga sutra.#

In the minimalist framework, however, this movement is syntactically illegitimate, since it does not have any driving force. Auxiliaries such as the one in (21) can have a reason to move to T or AgrS. There is, however, no requirement that could plausibly motivate movement of the auxiliary into the fronted NP. The movement of the auxiliary in (21) is thus syntactically superfluous. The sentence is therefore ruled out in syntax by the Last Resort Condition, which bans superfluous operations. So, the difference between the bad (21) and the good (7) is not that the good sentence satisfies the morphological requirements of clitics and the bad one does not. On the contrary, both sentences satisfy the morpho-phonological requirements of clitics. The difference lies in the fact that (7) is syntactically well formed, while (21) is not.

3 Conclusion

In this paper I have considered the behavior of SC clitics with respect to clitic climbing and VP ellipsis. I have shown that in overt syntax, clitics do not need to be in a cluster, adjoined to each other. Each clitic may be in a separate maximal projection in overt syntax. Furthermore, I have shown that clitics do not have to occur very high in the tree. These findings make syntactic approaches to the second position effect untenable, since these approaches all crucially rely on locating clitics in a cluster in a position which is very high structurally. The data presented in this paper provide

evidence for Bošković's (1995a, 1995b, 1997a, 1997b) account of second position cliticization.

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Theta-Role Assignment in On-line Processing of a Free Word Order Language¹

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1 Introduction

This study presents an experiment designed to test the processing of different word orders in Serbo-Croatian. Thematic role assignment and interpretation in on-line processing of a Slavic language has received very little attention in the psycholinguistic literature.² One of the problems encountered in designing any study of the processing of word order variation in a morphologically rich language is creating sets of temporarily ambiguous structures which differ in syntax only.

Parsing strategies that this experiment was designed to test rely on a bare syntactic contrast, and are derived from the modular approach to processing in which it is assumed that initial interpretation is influenced by syntactic information only. The results presented here show that other components of the grammar have to be taken into consideration in interpreting word order variation.

2 The Processing of Different Word Orders in Other Scrambling Languages

Languages that have been studied extensively with respect to subject/object preferences in the processing of basic and derived word orders in declarative sentences are Dutch and German. Frazier and Flores

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² Thematic roles are in this case interpreted as functional roles, i.e. assignment of syntactic functions of subject and object to NPs.

d'Arcais (1989), in a grammaticality judgement task used the type of structural ambiguity in which the verbal inflection plays the disambiguating role, as illustrated by (1) and (2) below.

- (1) De patient *bezoekt* de dokters.
(The patient visits the doctors.)
- (2) De patient *bezoeken* de dokters.
(The doctors visit the patient.)

The results indicate that Dutch speakers have a strong preference to interpret the initial (case ambiguous) NP as the subject.

In a series of experiments, Hemforth (1993) found that German speakers show the same preference for subject interpretation of locally ambiguous initial NPs. Bader (1994: self-paced reading) and Bader (1996: speeded grammaticality judgement) found higher reading times and a drop in grammaticality judgements in structures like (4), an indication of a processing difficulty caused by object-initial structural position in German embedded clauses.

- (3) Maria hat gesagt, dass sie die Eltern angerufen *hat*.
Mary has said that she the parents phoned has
(Mary has said that she has phoned the parents.)
- (4) Maria hat gesagt, dass sie die Eltern angerufen *haben*.
Mary has said that she (=her) the parents phoned have
(Mary has said that the parents have phoned her.)

In an eye-tracking experiment, using ambiguous embedded clauses in which the disambiguation is carried by the case marking on the second NP, as shown in (5) and (6) below, as opposed to the number morphology of the verb (cf. (3) and (4) above), Scheepers et al. (1997) found that subject-initial structures are processed faster than the object-initial ones.

- (5) Man erzählte uns, dass die hungrige Füchsin *den* fetten Hahn sah.
they told us that the hungry fox_{AMB} the fat rooster_{ACC} saw
(They told us that the hungry fox saw the fat rooster.)
- (6) Man erzählte uns, dass die hungrige Füchsin *der* fetten Hahn sah.
they told us that the hungry fox_{AMB} the fat rooster_{NOM} saw
(They told us that the fat rooster saw the hungry fox.)

In summary, based on various experimental findings from German and Dutch it can be argued that the parser has a strong preference to interpret an ambiguous initial NP in both main and embedded clauses as the subject.

3 Serbo-Croatian

3.1 *Studies on the Acquisition of Serbo-Croatian Word Order*

In order to better understand various aspects of sentence parsing it may prove useful to examine the data from acquisitional studies, as there appear to be similar processes going on. Radulović (1975) observed that Serbo-Croatian children produce fixed SO order across early language development, although the position of the verb varies.

Table 1 (adapted from Radulović 1975)
Spontaneous speech of one child aged 1,8-2,2

WO	%	WO	%	WO	%
SVO	13	SOV	3	VSO	2
OVS	0.2	OSV	-	VOS	1
SV	34	OV	2	VO	27
SO	0.8			VS	17

As shown in Table 1, SVO is the predominant word order, verb-initial structures are quite frequent, unlike the verb-final ones, and OVS and OSV structures are hardly produced at this stage.

Slobin and Bever (1982) examined the acquisition and use of different word orders in a number of languages. Table 2 illustrates the spontaneous Serbo-Croatian data.

Table 2 (adapted from Slobin and Bever 1982)

The percentage of utterances analyzed as SVO, SOV and VSO in spontaneous production in child-adult interaction in S-C

	Children	Adults
NVN (=SVO)	99%	97%
NNV (=SOV)	83%	67%
VNN (=VSO)	94%	87%

As shown in Table 2, children prefer the SO word order irrespective of the position of the verb, whereas adults allow for more variation, especially with verb-final structures. Slobin and Bever (1982) also conducted an act-out task combining different word orders and inflections. Example (7) illustrates one of the sentence frames used.

- (7) grebe // štene / maće / veverica
 scratches puppy ambN kitten ambN squirrell femS*O

In brief, Slobin and Bever (1982) observed that there is a strong tendency to take the first noun as an agent in both inflected and uninflected forms, indicating that the word order strategy is used irrespective of the presence of inflections. Second, location of inflection influences the word order strategy. The results show that an initial object inflection overrides the word order strategy more strongly than a final subject inflection. Slobin and Bever (1982:251)

observe that "[e]arly strategies of this sort seem bound to on-line processing, as evidenced by their sensitivity to a sentence-initial local cue on an object noun. More mature strategies will require deferral of interpretation until an entire clause has been received."

In sum, acquisitional data suggest that although the SO order is the preferred one in child grammar, the interpretation of other word orders is guided by some of the sentence processing strategies used in adult grammar.

2.2 *Adult Sentence Processing in Serbo-Croatian*

Urošević et al. (1986) conducted a number of different experiments (sentence verification task, naming task, lexical decision task) using three word sentences with morphologically unambiguous nouns. Some of their results are illustrated in Table 3 below.

Table 3 (adapted from Urošević et al. 1986)
Responses in msec in sentence verification task for 4-letter words in semantically plausible sentences³

SVO	1552 (1)	SOV	1554 (2)	VSO	1642 (3)
OVS	1774 (5)	OSV	1846 (6)	VOS	1690 (4)

Overall results show that SO orders are processed faster than OS orders. Additionally, results were found to vary from task to task, with no clear results in the lexical decision task. Urošević et al. (1986:192) interpreted such results in terms of a marked status of the OS order in the language: "[c]ertain word orders might be perceptually more complex ... the former (SO) may be evaluated faster

³ Numbers in parentheses indicate ranking of relative speed at which sentences are judged.

than the latter (OS) because the latter allows or signals the possibility that normal precedence relations may not hold".

In their second set of experiments (three lexical decision tasks), Urošević et al. (1988) also included a number of case-ambiguous nouns, in order to tease apart the effects of inflectional and word order strategies. Example (8) illustrates some of the test conditions used, and the main results are presented in Table 4.

(8) Sample sentence frame:

ljubav / radost / sreća / nagrada // donosi
 love (N) joy (N) luck (O) prize (S) brings

Table 4 (adapted from Urošević et al. 1988)
 Responses in msec in a lexical decision task

	S-marked	Unmarked	O-marked	Unmarked
SO	(SN) 759	(NN) 770	(NO) 715	(NN) 692
OS	(NS) 798	(NN) 779	(ON) 716	(NN) 714

In brief, object initial inflection blocks the word order strategy more strongly than does subject final inflection, indicating that the word order strategy can be overridden by an inflectional strategy. In the absence of inflections (N) only the word order strategy is available, but the 9msec difference (column 2) is statistically non-significant ($p > .05$) on the ANOVA, and the 22 msec difference (column 4) is significantly less robust ($p < .003$) than 39msec difference (column 1) between SN and NS orders. Thus no clear-cut results were obtained with structures with both case-ambiguous nouns, in which neither an inflectional nor a word order strategy may help the parser in theta-role assignment. The experiment reported below represents a partial replication of the Urošević et al. (1988) experiments, designed to test

the processing of different word orders in temporarily ambiguous structures.

3. Current Experiment

3.1 Processing Strategies Examined

A number of parsing strategies have been proposed to account for the processing of temporarily ambiguous structures of different types. As for thematic-role ambiguities (e.g., NVN ambiguity, where N is ambiguous between a subject and an object theta-role), they have been traditionally analyzed as parsed by using either the word order strategy (analyze the first N as subject) or the inflectional strategy (analyze the N marked Nominative as subject).

Within a serial model of parsing, perhaps the most influential strategy proposed for processing of filler-gap dependencies (required chains created by Wh-movement) is the *Active Filler Strategy* (AFS; Frazier 1987): "*Assign an identified filler as soon as possible; i.e. rank the option of a gap above the options of a lexical noun phrase within the domain of an identified filler.*"⁴ In short, the AFS predicts that the parser would always prefer to link the filler to the first grammatically possible position, i.e. the subject position. The AFS makes no predictions for the SC experiment as there is no identifiable filler.⁵ Although a scrambled element is formally a filler, the parser is provided with no strong syntactic cues to assume so.

De Vincenzi (1991) has proposed the *Minimal Chain Principle*, reformulating the AFS to incorporate processing of optional chains (MCP; de Vincenzi 1991): "*Avoid postulating*

⁴ This model is based on the assumption that the parser, when faced with an ambiguity, adopts one analysis only, not computing all the other possible analyses (as advocated by the Parallel Processing model). Garden-path effects arise when the initial analysis is no longer compatible with the incoming linguistic material.

⁵ In a language like Dutch (and German, too), in which the AFS was first tested, movement to Comp in main clauses is triggered by the V2 constraint, thus creating an identified filler.

unnecessary chain members at S-structure, but do not delay required chain members." In simple terms, a chain comprises a set of coindexed elements bearing only one case and one theta-role, where each member is coindexed with a c-commanding member. In the psycholinguistic literature chains are classified as optional or required, depending on the strength of the syntactic cues that they provide to the parser regarding the optionality/obligatoriness of postulating a movement derivation, as opposed to postulating a base-generated analysis. The difference between required and optional chains is crucial since the former analysis implies a multi-member chain, which is predicted to be more difficult to process than a singleton (one-member) chain. The first part of the MCP thus predicts that the parser would always prefer the non-movement analysis for optional chains. The prediction made by the AFS that a subject gap will be preferred to an object gap in required chains is replicated in the second clause of the MCP. The goal of Serbo-Croatian experiment was to examine, first, whether the MCP, which was initially proposed for the processing of empty categories, could be extended to the processing of scrambled overt NPs, and if not, which parsing strategy is used in the processing of different word orders.

3.2 *Design*

3.2.i *Materials* The main problem encountered in creating pairs of temporarily ambiguous structures was to make word order, inflectional, and/or prosodic clues inaccessible to the parser. Since all nouns were morphologically ambiguous between nominative and accusative forms, a lexically restricted set of nouns had to be used, which made it impossible to always have two semantically reversible NPs. Verb position was crucial in measuring on-line processing effects as the disambiguation was carried by the semantics of the verb. Since only embedded sentences were used, verb-initial orders were ruled out, which are uninformative for on-line processing due to early disambiguation. Thirty-two sentence frames were created, and the test

conditions used are illustrated in (9). Subscripted numbers indicate positions at which reading times (RTs) were measured.

- (9) Celo selo je bilo svesno toga da je
whole village was aware of the fact that has
- a. venčanje₁ / izazvalo₂ / divljenje₃ / čak i kod gostiju₄ / iz
grada. (SVO)
wedding / caused / admiration / even in guests / from city
(The whole village was aware of the fact that the wedding
has caused admiration even in the guests from the city.)
- b. divljenje₁ / izazvalo₂ / venčanje₃ / čak i kod gostiju₄ /
iz grada. (OVS)
- c. venčanje₁ / divljenje₂ / izazvalo₃ / čak i kod gostiju₄ /
iz grada. (SOV)
- d. divljenje₁ / venčanje₂ / izazvalo₃ / čak i kod gostiju₄ /
iz grada. (OSV)

3.2.ii Subjects Thirty-two adult native speakers of Serbo-Croatian living in the Ottawa area were tested.

3.2.iii Technique The technique used was a self-paced reading task, an on-line task (unlike Urošević et al.'s (1986, 1988) off-line measurements). The subordinate task was a repetition task. Sentences were presented in phrasal chunks of two to four words each. Subjects were instructed to read at a natural rate. They received written instructions, followed by a practice trial. No subject saw more than one version of each sentence, and each test sentence appeared equally often in each condition. Each subject received four tokens of each sentence type. A within-subjects design was used, in which the order of presentation was counterbalanced. The repetition task was recorded for each subject.

3.3 Predictions

Structural conditions used are repeated as (10a-d) below.

- (10) a. S / V / O / AdvP /
 b. O / V / S / AdvP / ...
 c. S / O / V / AdvP / ...
 d. O / S / V / AdvP / ...

According to the first clause of the MCP, there is a general preference for shorter chains. The parser will prefer to posit unmoved elements over moved ones, i.e. initially analyze all NPs as being in their argument positions. Thus the parser should have the least difficulty processing a structure like (10a).⁶ Condition (10b) is predicted to be the most difficult to process, since a reanalysis is needed. However, early disambiguation (the position of the verb) may be crucial for easy recovery from the misanalysis. Structures (10c) and (10d) are equal in terms of chain complexity, yet the former requires no reanalysis if the first NP, using the MCP, is interpreted as subject. Structure (9d), on the other hand, is predicted to be more difficult to parse since a reanalysis is needed at the verb. The critical contrast needed for testing the use of the MCP is exemplified by (10c) and (10d), structures in which the disambiguation comes after both overt arguments. The question is whether theta role assignment is done on-line or whether it is delayed, given two adjacent, morphologically indistinguishable NPs.

⁶ Subject raising to SpecIP/SpecAgrSP, as well as object raising through appropriate projections for case checking, is ignored here, assuming that the MCP is not sensitive to feature-checking moves.

3.4 Results

Main results are presented in Table 5 below.

Table 5

Mean reading time (RT) for four conditions at four positions

POSITION	1	2	3	4
Cond. 1 (SVOAdv)	1123	1042	1114	1281
Cond. 2 (OVSAAdv)	1113	1039	1236	1356
Cond. 3 (SOVAdv)	1160	1311	1180	1253
Cond. 4 (OSVAdv)	1147	1397	1209	1325

Analyses of variance (ANOVA) were conducted on the RTs for each position with both subject and item as random effects. Results may be summarized as follows:

- (i) Condition 1 (SVO) was read faster than condition 3 (SOV), and this difference was significant. ($F_1(1,31)=9.46$, $p<.0001$; $F_2(1,31)=10.31$, $p<.0001$).
- (ii) Condition 2 (OVS) was faster than condition 4 (OSV) ($F_1(1,31)=13.57$, $p<.0001$; $F_2(1,31)=9.83$, $p<.0001$).
- (iii) Subject-first orders (1 and 3) were read faster than object-first orders (2 and 4) ($F_1(1,31)=3.33$, $p<.02$; $F_2(1,31)=3.10$, $p<.03$).
- (iv) A planned pairwise comparison between conditions 1 and 2 (SVO and OVS) showed no significant effect at any of the positions tested.
- (v) The same result obtained for comparison between conditions 3 and 4 (SOV and OSV).

3.5 Discussion

The results support the prediction that the parser uses some of the processing strategies discussed, assigning the subject theta role to the initial (case-ambiguous) NP. In condition 1 (SVO), however, the use of MCP cannot be distinguished from the use of the canonical strategy. Although the relative ease with which condition 2 (OVS) is processed may be caused by the presence of early disambiguation, the difference of 122 msec at position 3 between conditions 1 and 2 suggests that the parser does reanalyze the first NP in condition 2 as the shifted object.

As for the processing of SOV and OSV structures, the results replicate those of Urošević et al. (1988). The absence of a significant difference between conditions 3 and 4 suggests that, irrespective of the initial thematic role assignment, as soon as the parser encounters two NP arguments adjacent to one another, any further assignment is delayed until enough information is received to disambiguate the structure, as evidenced by the fact that in both of conditions 3 and 4 there is an increase in RTs at position 2 (second argument). The parser knows that one of the NPs is not a singleton chain, and chain postulation is delayed until it checks which one has been extracted.

Frequency effects regarding the status of SVO word order are reflected in processing. On the other hand, although OVS structures are quite rare in natural speech (0.2% by one child (cf. Table 1); 1% by children and 3% by adults (cf. Table 2)) they are not the most difficult structures to process, due to early disambiguation. A comparable result was obtained in Urošević et al.'s study, that is OVS order was faster than OSV (cf. Table 3).⁷

Thus, the predicted results for SOV and OSV structures were not obtained. The parser delays the analysis, as correctly hypothesized for adults by Slobin and Bever (1982) based on children's performance

⁷ These findings seem to argue against the tuning model of sentence processing, which assumes that in cases of ambiguity the preferred analysis is the one compatible with the most frequent analysis in the language.

on the act-out task. Furthermore, it may be argued that the MCP is overridden in these structures due to their marked status in the language. The absence of a significant difference between SOV and OSV indicates that markedness is not so much valued in terms of OS vs. SO (as predicted by Urošević et al. 1988; and correctly postulated for German (Meng and Bader 1996) and Dutch (Kaan 1996)) as it is an effect of the verb final position.⁸

And finally, as observed by Schlesewsky et al. (1996), declarative structures are not good for testing syntactic parsing strategies, due to problems relating to marked status, frequency effects and the precise structural representations assigned to different derivations. Furthermore, in the SC experiments a lexically restricted set of materials had to be used, potentially problematic from both the theoretical and empirical point of view.

4 Concluding remarks

The present results do not provide support for or against the active use of the MCP in the processing of word order variation in Serbo-Croatian. The parser has the least difficulty with subject initial structures, which can be explained under any of the following approaches: the MCP, the canonical strategy, a markedness approach, a frequency theory, etc. When a temporary syntactic ambiguity as to the functional role interpretation is created by combining a number of factors, i.e. scrambled word order, absence of overt morphological case marking, NP adjacency, verb final position, etc., the parser has no choice but to delay the interpretation until more information is received during on-line processing.

The results reported here provide additional support for the existence of two distinct parsing modules within the human sentence parsing mechanism, i.e. a thematic and a syntactic processor. Carlson

⁸ Verb initial structures, on the other hand, are quite frequent in SC, see Table 1, with 47% verb initial vs. 5% verb final utterances.

and Tannenhaus (1988) propose that thematic role reassignment is relatively cost-free, while Frazier (1990) assumes that thematic role assignment can sometimes be delayed. Absence of strong garden-path effects is predicted under both views.⁹ Bader (1994) combines both approaches, proposing that case-assignment and theta-role assignment can either be delayed or redone without cost. Based on his study of scrambling ambiguities in German, Bader (1994) notes that even in cases of derived word order, which is marked in the language, and in which both NPs are underspecified with respect to case, none of these factors alone is sufficient enough to produce garden-path effects. Thus the strength of garden-path effects resulting from theta-role reassignment cannot be predicted on the basis of word order variation only. Furthermore, the mode of disambiguation also plays an important role. The difference in garden-path strength between structures disambiguated by case and those disambiguated by agreement has been observed and discussed for German subject-object ambiguities in Meng and Bader (1996).¹⁰

All of the above arguments suggest that the results from the Serbo-Croatian experiment on the processing of word order variation are in no way conclusive. Much more work remains to be done before we can describe and analyze the exact nature of the parsing mechanism used in on-line thematic role assignment in a "free" word order language. A follow-up experiment is currently being carried out, which will incorporate some of the issues raised in previous studies on the processing of the word-order variation in Serbo-Croatian, as well as in other languages.

⁹ This experiment is a part of a larger set of experiments testing processing strategies in Serbo-Croatian. In an experiment on the processing of filler-gap dependencies in *koji* (which) relatives, in which the same word order variation as well as the same lexical material was used, the results, i.e. the contrast between conditions Wh-V-O-AdvP and Wh-V-S-AdvP at position 3, did reach significance. This indicates that the AFS and the MCP are operative in Serbo-Croatian, suggesting that required chain processing is governed by the syntactic processor.

¹⁰ Similar differences in the strength of disambiguation have been detected in processing word order variation in Serbo-Croatian (Urošević et al. 1988).

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A Discussion of Resumptives in Colloquial Czech*

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Relative clauses in Colloquial Czech are either introduced by an inflected relative pronoun, as in Standard Czech, or, unlike Standard Czech, by an invariable complementizer *co*. In the latter case, a resumptive pronoun, often a clitic, represents the target of relativization in a well-defined set of environments. This paper describes the distribution of such resumptives and speculates about a principled account. Recent discussions about “pronouncibility” and spell-out of features (Broihier 1995; Pesetsky 1996) provide loose inspiration.

1 A Description

1.1 Basic Facts

Observe the following examples:

- (1) a. muž, kterému nikdo nevěří (Standard)
man to-whom nobody believes
- b. chlap, kerýmu nikdo nevěří (Colloquial)
man to-whom nobody believes
- c. chlap, co **mu**¹ nikdo nevěří (Colloquial)
man COMP to-him nobody believes
“man whom nobody believes”

(1a) shows a relative clause with a dative-inflected *wh*-word and no resumptive pronoun. The relevant syntactic properties are in

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1 Resumptive pronouns appear in boldface throughout.

line with the Indo-European mainstream; cf. German *der Mann, dem/welchem (dat) niemand glaubt*. The first colloquial example, (1b), is syntactically identical with (1a), the only difference being the sound shape of the relative pronoun: the initial cluster *kt-* is simplified to *k-* and the standard *é* appears as *y*. Both points count as regular correspondences between the two registers. (1c), on the other hand, shows a relative clause with an invariable complementizer and a pronoun overtly representing the target of relativization. The fact that the complementizer *co* is not a *wh*-word is perhaps not so obvious, since *co* etymologically relates to the interrogative pronoun *co* “what,” but it is easy to show that *co* is an invariable complementizer rather than a relative pronoun: it never appears case-inflected, has no gender, cannot be governed by a preposition, etc.² This situation is not unusual—by and large, *co* is comparable to English *that* in examples such as:

- (2) a problem that remains unsolved

However, English *that* is a general purpose complementizer, not specific to relative clauses, while Czech *co* is construction specific in the sense that it differs from the unmarked complementizer *že* “that” that is used with verbs of saying:³

- (3) Slyšíme, že / *co přijeli
we-hear that they-arrived

2 Discussing analogous data in Serbo-Croatian, Gallis (1958) speaks about a *relativum generale*, an element he does not consider a pronoun. However, an inflected *co* exists in Czech relatives also, as seen in:

- (i) To, čemu neveržili, byla pravda
that to-what (dat) they-not-believed was truth

The example illustrates a type of relative clauses in which the head requires a specific relative pronoun. Specifically, *to* 'it, that' requires *co*, as do *všechno* 'everything', *málo* 'little', etc., and is incompatible with *který*. At any rate, this *co* is a regular *wh*-word with case and gender.

3 The non-standard register also uses *jak*, literally 'how', in the same function as the complementizer *co*. Here again, a *wh*-word has been generalized to an invariable, construction-specific complementizer.

Examining *co*-relative clauses in more detail, we find that the position relativized can have three distinct representations: a gap (henceforth empty category, *ec*), a clitic pronoun, and a full pronoun. The first case is exemplified in (4):⁴

- (4) a. To je ten pes, co ec tu štěká celou noc
 this is the dog COMP here barks whole night
 "This is the dog that barks here all night."
 b. To je ten nůž, co ec byl na stole
 this is the knife COMP was on table
 "This is the knife that was on the table."
 c. To je ten nůž, co Petr našel ec na stole
 this is the knife COMP Peter found on table
 "This is the knife Peter found on the table."

The second case—target representation by a clitic—is exemplified in (5):

- (5) a. To je ten chlap, co mu každěj pomáhá
 this is the guy COMP to-him (dat) everyone helps
 "This is the guy everyone helps."
 b. To je ta socha, co se jí dotk
 this is the statue COMP refl of-her (gen) touched
 "This is the statue he touched."
 c. To je ta váza, co jí zatřás
 this is the vase COMP it (instr) shook
 "This is the vase he shook."

Examples in (5) show verbs that take indirect objects (dative, genitive and instrumental). Relativization into these positions requires the obligatory presence of a pronominal clitic. A full pronominal form is not acceptable:

4 As there is no complete description of the strategy in question, judgments represent my own usage. For partial descriptions see Svoboda (1967) and Šgall et al. (1992); dialect examples can be gleaned from Lamprecht (1976). In constructing examples, I have used colloquial morphology and lexicon.

(6) *To je ten chlap, co **jemu** každěj pomáhá

where *jemu* “to-him” is the strong counterpart of *mu*; cf. (5a).

Finally, we note instances in which the target is represented by a full pronominal form:

(7) a. To je ten chlap, co s **ním** mluvili
 this is the guy COMP with him they-talked
 “This is the guy with whom they talked.”

b. To je ten chlap, co mluvili s **jeho** ženou
 this is the guy COMP they-spoke with his wife
 “This is the guy with whose wife they talked.”

(7a) shows a pronoun functioning as the object of a preposition, (7b) shows a possessive pronoun. The pronoun has a resumptive reading in both instances.⁵

1.2 Subjacency Violations

As has often been noted in the literature on resumption, the strategy is generally not constrained by what is called islands, i.e., environments out of which movement is normally not possible. The examples below show this type of island violation in Colloquial Czech:

(8) Resumptive in a “whether”-clause

To je ten chlap, co teď nevím, **jesli**
 this is the guy COMP now I-not-know whether

5 The resumptive strategy is quite common in Indo-European languages, although details vary. Běličová and Sedláček (1990), a basic survey, asserts the presence of the equivalent of *co*-relative clauses in almost all Slavic languages. Romance languages also use this strategy; see Schafroth (1993). In both the Slavic and Romance cases, the strategy is usually relegated to non-standard registers. Modern Greek and Modern Irish, on the other hand, exploit resumption in the literary standard; see Joseph (1980) and McCloskey (1990), respectively. Non-Indo-European languages with resumptives have also been studied (e.g., Georgopoulos 1991; Shlonsky 1992). See also Safir (1996) for a discussion of English.

sme **mu** nedali dva lístky
 AUX-1 to-him we-not-gave two tickets

“This is the guy that I now don’t know whether we didn’t give him two tickets.”

(9) Resumptive in a “if”-clause

To je ten chlap, co ti říkám, že když
 this is the guy COMP to-you I-say that if

mu nedáme dva lístky, tak budem mít potíže
 to-him we-not-give two tickets, so we-will have troubles

“This is the guy that I am telling you that if we don’t give him two tickets, we’ll have troubles.”

(10) Resumptive in a relative clause

To je ta ženská, co sem ti dal
 this is the woman COMP I-aux to-you gave

ten časopis, co v něm byla její fotka
 the magazine COMP in it was her photograph

“This is the woman I gave you the magazine that had her picture in it.”

The last example is notable in that the deepest embedded relative clause contains two resumptives: one that relates to its local antecedent (*v něm* “in it” is construed with *časopis* “magazine”), and one that relates to the remote antecedent (*její* “her” is construed with *ženská* “woman”).

2 Discussion

The data reviewed so far suggest at least three generalizations about the strategy under consideration:

- (11) a. There are no “construction specific” resumptives; the strategy exploits forms that are independently available: full pronouns, clitic pronouns, and zero forms.
 b. There is a construction specific complementizer.
 c. The resumptive strategy does not obey subadjacency.

The following three-piece structure is the backbone of the resumptive construction:

- (12) antecedent nominal_i — *co*_j — (zero) resumptive_k

Coindexation within this structure has different sources. The first and the second element, I assume, are interpretively related by the Rule of Predication—which is in line with the idea that relative clauses are names of properties to be predicated of the nominal they depend on. I will not discuss this part of (12) here, and, focus only on the second and third positions, i.e., on segments internal to the relative clause.

2.1 Nominatives and Accusatives

Fragments of the Czech strategy seem to exist in other Slavic languages also. Consider Russian relative clauses with *čto*-complementizer and gaps in the subject and object position:

- (13) a. Živu v tom domike, čto ec protiv vašix okošek
I-live in that house COMP against your windows
“I live in the house that faces your windows.”
- b. V kotletax, čto podavali ec, bylo mnogo luku
in steaks COMP they-served was a-lot of-onion
“In the steaks they were serving there was a lot of onion.”
- (14) a. Ja znaju vrača, čto ec lečit malariju
I know doctor COMP treats malaria
“I know a doctor who treats malaria.”
- b. Obuv', čto ne nosiš' ec, vybros'
shoes COMP not you-wear throw-away
“Throw away shoes that you do not wear.”

The first set of examples is representative of an older poetic style,⁶ the latter is non-standard. Significantly, this strategy does not reach any positions beyond subject and direct object.

6 (13a), gleaned from Xalizeva et al. (1989: 71), stems from Puškin; (13b), excerpted from Formanovskaja (1978: 84), is Čexov's. Confronted with examples such as these, native speakers report a “poetic” or “folkloristic” flavor, and this is what Russian stylists also claim.

It is plausible to claim that Russian only has a basic strategy with no overt resumptives, while Czech, sharing this strategy, requires obligatory spell out in the form of overt resumptives with oblique and prepositional cases and possessives. The basis for pinning down the basic strategy seems obvious—only structural (grammatical) cases are zero-represented (see also Broihier 1995). Let us thus hypothesize that structural cases, both in Czech and Russian, have no significant feature content and can thus be recovered at no special cost if they are not phonetically represented. This approach is compatible with a variety of case theories—the main point being that case and theta-role are separated, i.e., that theta roles do not “semantically “contaminate” case. For instance, a theory that assumes that structural case is a pure agreement phenomenon (e.g., nominative agreeing with [+AGR] and accusative with [+Tense]) makes the sufficient distinction (cf. Yadroff 1996 for a variant of this approach).⁷

2.2 Apparent Violations

Returning to Czech, we find at least three types of data that contradict the claim that the basic strategy consists in obligatory non-pronunciation of overt nominative subjects and accusative objects. For one thing, certain subjects and direct objects cannot be recovered without an overt resumptive; and, vice versa, certain adjunct accusatives seem to be recoverable without an overt resumptive.

2.2.1 Animate Objects. The reader familiar with Colloquial Czech may have noted that the set of sentences exemplifying relativization of direct objects is not complete. Besides (15), we also note (16):

Formanovskaja (1978: 84) speaks about „poëtičeskij ottenok” and gives examples mostly from older literature and fairy tales. All this notwithstanding, there is consensus that the strategy can involve only subjects and objects (Formanovskaja 1978: 85).

⁷ Since Slavic languages often allow pronominal subjects to drop, I stress that this line of explanation is not available for *co*-relatives. For one thing, the Czech register under consideration shows a distinct tendency towards retention of pronominal subjects (*Já jsem nespál* “I didn’t sleep”); secondly, the apparent subject pronoun drop in *co*-relatives is obligatory. All this hardly points to pro-drop.

- (15) To je ta kniha, co viděli ec na stole
 this is the paper COMP they-saw on table
 "This is the book they saw on the table."
- (16) To je ten chlap, co ho viděli v tramvaji
 this is the guy COMP him saw in streetcar
 "This is the guy they saw in the street car."

The distinction observed here is that between animate and inanimate objects. One way of interpreting the contrast is to say that the animacy feature in some sense represents information in addition to structural case and that this information must be pronounced, roughly along the lines of (17):

(17) The feature "animacy" needs phonetic support

An obvious problem with (17) is that animate *subjects* do not follow this maxim; as we have seen earlier, there is no difference between animate and inanimate subjects with respect to resumption—neither can be overtly represented. Furthermore, we would expect that accusatives of all animate nouns follow (17). However, this is not entirely so. I observe that in my own speech I am comfortable with zero resumptives in the following cases:

- (18) To jsou ty studenti, co sme nepřijali ec
 this are the students COMP we-AUX not-accepted
 "These are the students whom we did not accept."
- (19) To je ta holka, co sme viděli ec ve škole
 this is the girl COMP we-aux saw at school
 "This is the girl I saw in the streetcar."
- (20) To sou ty holky, co sme chtěli pozvat ec
 these are the girls COMP we-AUX wanted to-invite
 "These are the girls we wanted to invite."

The judgments are subtle, but in the absence of any other data, I will not dismiss them entirely because they point in a somewhat different direction than (17). Note that if we assume that zero-resumption with direct object animate plurals, (18), animate

feminine singulars, (19), and plurals, (20), indicates that the target is accusative-marked, then the fact that there is overt resumption with direct objects of animate singular masculines, (16), may well indicate that they are not accusative-marked. Following older literature on the so-called genitive-accusative syncretism in Slavic freely, e.g. Meillet (1897), I will assume that they are genitive-marked. Morphology thus keeps the two groups of data apart.

If this is so, what matters is (morphological) case, not animacy. (17) will be thus replaced by:

(21) Oblique cases need phonological support (in Czech)

This is obviously not more than an empirical generalization, and it will need further research to establish whether a higher-order statement can be invoked.

2.2.2 Resumptives in Conjunctions. There is another case of overtly represented arguments that is not expected if we rely on a complete dissociation of structural and inherent case. Note the behavior of nominative subjects in coordinations such as:

(22) To je ten chlap, co von a Karel hráli
 this is the guy COMP he and Karel played
 proti nám
 against us
 "This is the guy that he and Karel played against us."

Analyzing (22) from the perspective of feature spell-out implies a search for a heavy feature that needs phonetic support. Let us thus assume, for the sake of discussion, that conjunctions, i.e., elements dependent on the conjunction word, receive from the conjunction word a "feature"—an index, perhaps—that identifies them as conjunctions. This can be translated into the following maxim:

(23) The feature "conjunction" needs phonetic support

The obvious problem with (23) is that it has no independent motivation. And depending on what version of the Coordinate

Structure Constraint remains in the grammar, (23) might simply be redundant. I will therefore conclude that the evidence for a spell-out-based account of the coordination facts is weak at this point, but will return to the case shortly.

2.2.3 Focused Subjects. While the idea of phonetic support for conjuncthood seems to be weak as presented, there are facts that point in the direction of phonetic support for strong features in situations where focus is assigned. Consider:

- (24) To je ten chlap, co ani von (sám)
 this is the guy COMP not-even he (himself)
 nevěděl co a jak
 knew what and how
 “This is the guy that not even he (himself) knew what to do.”

In contrast to cases discussed above, the assumption that the focusing particle *ani* “not even” induces heaviness on the material within its scope seems perfectly natural. We can thus posit:

- (25) The feature “focus” needs phonetic support.

With (25) available, we may reconsider the obligatory appearance of resumptives in coordinate structures. Let us speculate that every coordinate structure, i.e., a set of conjuncts, implies the presence of contrast, i.e., a special instance of focus. If so, the obligatory appearance of a resumptive would follow from (25) rather than from (23). The suggestion is speculative, but viable. Note that coordinate structures based on disjunction words or on *neither-nor* structures are arguably contrastive in nature.

2.2.4 Temporal Accusatives. Turning to the other set of cases to be discussed, namely zero representation of certain adjuncts, I note that in my speech, at least, I am comfortable with the following judgments:

- (26) to léto, co bylo tolik komárů
 the summer COMP was so-many mosquitoes

- (27) ta noc, co nejezdilo metro
 the night COMP didn't-run subway

The position relativized is that of a temporal accusative; cf.:

- (28) To léto bylo tolik komárů
 (29) Tu noc nejezdilo metro

Based on the idea that only grammatical cases free of heavy features are recoverable, a gap is not really expected—standard grammatical wisdom tells us that temporal accusatives are non-structural accusatives contaminated by semantics. A closer look reveals, however, that this in fact need not be so. Notice that we have adopted the position that accusative is licensed through agreement with [+T]. If accusative is the canonical licensee of [+T], and if temporal adjuncts could be shown to depend on Tense, then it is plausible to speculate that temporal accusatives result from an extension of case licensing (agreement) to the entire T domain. Multiple specifier structure might be invoked at this point.⁸ Consider the following mismatches:

- (30) Včera / *zítra si uvařili kuře
 yesterday / tomorrow refl they-boiled chicken
 “They boiled themselves a chicken yesterday/*tomorrow.”
- (31) Molekulová váha vodíku je (*dnes) 1.00797
 molecular weight of-hydrogen is (today) 1.00797
 “The molecular weight of hydrogen is 1.00797 (*today).”

Example (30) shows that adverbs such as *zítra* “tomorrow” cannot modify an event located in the past; (31) shows that a generic statement cannot be point-located. At the same time we note that not all adjuncts depend on Tense. The so-called manner adverbials show no selectivity with respect to tense:

- (32) František mluví/ mluvil/bude mluvit [tichým hlasem]_{instr}
 Franciscus speaks/ spoke/ will speak with-quiet voice
 “Franciscus speaks with a quiet voice.”

8 Cf. Wechsler and Lee (1996) for a lengthy discussion in a somewhat different framework.

and, crucially, manner AdvPhrases can not be in accusative:

(33) *František mluví [tichý hlas]_{acc}

This is expected on the assumption that temporal adjuncts, but not manner adjuncts, are licensed by Tense. We can thus conclude that temporal accusatives are structural in the desired sense and hence need no phonetic support.

3 The Less, the Better

Let us now turn to other aspects of target representation in relative clauses with resumptives. In languages with clitics the following choices arise:

- (34) a. A gap or a phonetically overt representation?
b. If phonetically overt, a clitic or a full form?

Intuitively speaking, we seem to be dealing with a scale of sorts:

- (36) Scale of Resumptive Strength
zero - clitic - full pronoun
(where “strength” increases from left to right)

Scales, however, are not a satisfactory tool of explanation. Instead, I will assume that the choice of the resumptive form, and in particular, the choice between a full form and a clitic, is regulated by the following maxim:

- (34) *The Less, the Better*
Choose the minimum overt representation available.⁹

Assuming that a clitic relates to a full form as a sufficient spell out of the relevant features, clitics will be available for resumption. Their distribution is, of course, regulated by the language particular grammar of clitics—in other words a prepositional object in Czech

⁹ This paraphrases Broihier’s (1995) Minimize Trace Constraint; see also Pesetsky (1996, section 6). Berent’s (1980) idea that pronominal clitics are overt traces might also be related to this point.

will not be represented by a clitic resumptive because a clitic cannot appear in this position on independent grounds.¹⁰

4 LF Speculations

The literature on resumptives has long recognized that while there is nothing like an inherent resumptive pronoun, the item employed for resumption differs from other pronouns in that it functions as a variable, i.e., like a *wh*-trace. The problem then is how to express the fact that a pronominal can function this way. One way of thinking about this is to regard a resumptive as the “next-to-best” spell-out of the set of features that characterize a variable (Pesetsky 1996). In the classical Government & Binding Theory, *wh*-traces are characterized as [-pronominal, -anaphoric]. I will assume that this is actually the feature composition that underlies both resumptives and *wh*-words. The relevant distinction, I will posit, is due to different values of an additional feature, [strong]. If [-pronominal, -anaphoric] combines with [+strong], it will be spelled out as a *wh*-word; if it appears together with [-strong], it will be spelled out by the best available candidate in Phonetic Form, subject to conditions discussed above. This way, resumptives can function as variables in LF, but appear as pronouns in PF. The former kind of spell-out is instantiated by a specialized item, a *wh*-word; the latter by an independently available item, a (clitic) pronoun. The latter “default” is a language particular choice, however.¹¹

Assuming this framework, the variable at LF does not know what its spell out is. Does the variable then move at LF? Two scenarios can be envisioned. The LF variable needs to be bound locally by its operator in C^0 —it thus moves into the specifier of the relevant COMP. The driving force behind this movement might well be:

10 In an early version of this paper I tried to explore the idea that the resumptive strategy is unavailable in Russian because Russian has no clitics. But, clearly, clitics only play a secondary role in resumption as indicated by languages that have resumptive pronouns, but no clitics.

11 In other words, the availability of resumptives is a matter of a language-specific parameter; the suggestion has been made in the literature also (cf. Epstein 1983).

- (35) All binders must bind, and all bindees must be bound locally

Alternatively, the locality requirement might be dropped:

- (36) All binders must bind, and all bindees must be bound

which effectively amounts to coindexing along the lines of the so-called Unselective Binding.

I have no way of deciding between the two hypotheses.¹² It is clear, however, that under the LF-movement analysis derivations with a *wh*-spell out must be ruled out if they involve syntactic island violations. Derivations with a resumptive spell out will be compatible with LF movement as well with Unselective Binding at LF, all things being equal. The assumption of course is that subjacency does not hold at LF. This, indeed, is crucial—if there were parametric variation at LF, the whole concept of LF might just as well be abandoned.

5 To Sum Up

To end on an optimistic note, I see some prospects for a pronunciation-based approach. However, the present account is still burdened with data that are not easy to accommodate: recall that the solution of the animacy facts took recourse to a unorthodox idea of genitive-marking for singular masculine objects and that the data base was narrow. Furthermore, a comparative analysis should obviously help us in obtaining a larger picture. However, certain aspects of the approach that focuses on conditions for feature spell-out transcend specific frameworks and thus merit further attention.

12 Objections against LF-movement have been raised. Cole and Hermon (1994) suggest on the basis of data from Quechua that there are empirical reasons for abandoning this concept.

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The Syntax of Approximative Inversion in Russian (and the general architecture of nominal expressions)*

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The phenomenon of approximative inversion (AI) in Russian, exemplified in (1), has not attracted much attention in the linguistic literature within the formal frameworks.¹

- (1) a. On otdal svoj laptop [za pjat' knig] (no inversion)
He traded own laptop for five books_{GEN.PL}
'He traded his laptop (computer) for five books.'
- b. On otdal svoj laptop [za knig pjat']
He traded own laptop for books_{GEN.PL} five Colloquial
'He traded his laptop for *approximately* five books.'
- c. On otdal svoj laptop [knig za pjat']
He traded own laptop books_{GEN.PL} for five Standard
'He traded his laptop for *approximately* five books.'

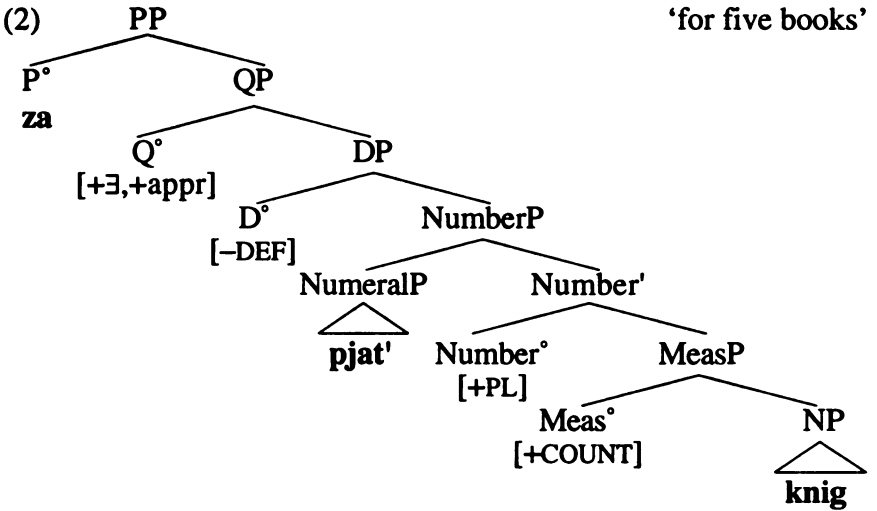
However, under closer examination this phenomenon presents a number of puzzles which pose a challenge to any formal description.

1 Background

We begin by presenting our previous assumptions—cf. Billings and Yadroff (1996)—about the syntactic structure of approximative-inversion constructions, without going into too much detail about these structures. For the uninverted stage in (1a) we proposed (2):

* We are thankful to the audience at FASL-6, especially L. Babby, G. Fowler, S. Franks, N. Kondrashova, M. Lambova, B. Partee, Lj. Progovac, and I. Sekerina, who made comments at the talk. Of course, any shortcomings that remain in the paper are, of course, our own responsibility.

¹ That is, except for short preliminary studies in Billings (1995: 162-189), Franks (1995: 165-174) and Mel'čuk (1985: 147-161).

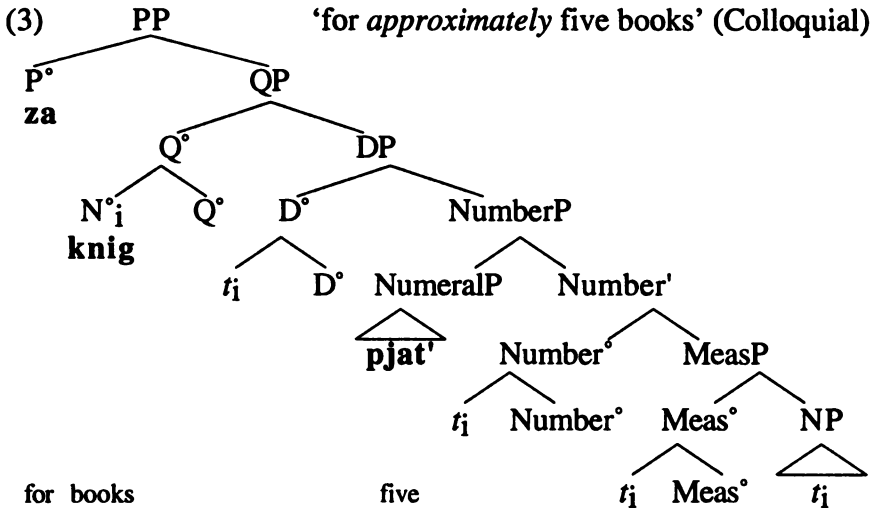


The primary innovation in this structure is the functional projection MeasureP between NumberP and NP.² We proposed the functional category Meas° to serve as a checker of a formal feature of nominals [±COUNT]. The approximative-inversion construction in East Slavic makes this category detectable: If the nominal expression contains a mass noun or N°-movement is blocked by an adjective, then this category must get lexical support to check off a strong feature in QP [+APPROXIMATION]. Q and D are traditional functional categories. We likewise treat Number° as a purely functional category (i.e., which contains only abstract formal features in the syntactic part of the derivation) and hosts numerals in its specifier.

The D projection does not receive direct empirical support in Russian, since this language has no articles as such. However, there exists indirect evidence to support a DP in Russian; see Padučeva (1985: 79-107). This [±DEFINITE] distinction, although not always overtly expressed, limits the distribution of a nominal expression in various structures. In fact, we have identified that approximative inversion is in complementary distribution with [+DEF] expressions. For this reason, in order for head-movement through D° to be possible, the setting for D° must be [-DEF].

² Krifka (1995) has developed similar ideas pertaining to the presence of Measure Phrase in the nominal structure from a totally different perspective. We are thankful to Barbara Partee for bringing this paper to our attention.

We previously considered approximative inversion to be movement of N° (cf. Franks 1995: 165–74): movement of the head noun through the higher ones up to a target head. Approximative inversion occurs when N° head-adjoins first into $Meas^\circ$, then into $Number^\circ$, then into D° , and finally into Q° , as shown in (3):



This movement is licensed by a feature in Q° that must be checked overtly—a “strong” feature in the framework of (Chomsky 1995). We preliminarily identified this feature simply as [+APPR].

In this paper we revise our proposal as follows:

- The landing site is not Q° , but rather D° . We do away with QP .
- There is no noun-movement in approximative inversion as such; what moves is the measure word ($Meas^\circ$).
- Nominal expressions have two separate “determiner” projections (a split-DP hypothesis): $DefP$ and $RefP$.

2 Ruling out a quantifier analysis

To establish the general logic of our approach, we begin with a simple question: Why does juxtaposing a noun and a numeral induce an approximative meaning at all? Within the minimalist approach the only way to render this phenomenon is to assume that

the nominal expression contains a certain functional category with a strong feature, [+APPR], which must be checked off prior to Spell-Out.

In order to determine the category of the projection which the noun moves to, in the remainder of this section we consider its behavior, interpretation and distributional properties.

2.1 The case for weak quantifiers

Exactly like so-called weak quantifiers,³ approximative-inversion nominals lose their quantificational reading in existential sentences:

- (4) Čelovek pjat' bylo v sadu.
 persons_{GEN.PL} five was_{NEUT.SG} in garden.
 a. Of some bigger set, a set of approximately five persons were in the garden.
 b. There were approximately five persons in the garden.
 (no presupposition of a larger set)
- (5) V sadu bylo čelovek pjat'.
 in garden was_{NEUT.SG} persons_{GEN.PL} five
 a. Quantificational reading, as in (4a), is **not** available.
 b. There were approximately five persons in the garden.
 (no presupposition of a larger set)

The only interpretation conceivable for an approximative-inversion construction is approximate cardinality. This is what is observed in the corresponding sentences with weak quantifiers:

- (6) a. Some men were in the garden.
 b. There were some men in the garden.

In (6a) both quantificational and plain cardinal readings are possible, while in (6b) the quantificational reading disappears.

Exactly like weak quantifiers, approximative inversion is fine as a nominal predicate, in contrast to strong quantifiers:

³ The distinction between strong and weak quantifiers was introduced (and termed as such) by Milsark (1974). The hallmark property distinguishing these two groups of quantifiers (and DPs) is that strong quantifiers (*every, most, each, all, etc.*) are excluded from existential constructions with *there*: **There are most/all people in the garden.* Weak quantifiers—such as numerals, *some* (stressless), *several, many*—are allowed in these constructions: *There are some/several/ many people in the garden.*

- (7) a. Kotov tam bylo štuk pjat'.
 cats_{GEN.PL} there was_{NEUT.SG} items_{GEN.PL} five
 'As for cats, there were about five.'
- b.* Kotov tam {bylo/byli} {vse/vsex} pjat'.
 cats_{GEN.PL} there {was_{NEUT}/were_{PL}} all_{{NOM/GEN}.PL} five

In cleft sentences, approximative inversion is fine, as shown in (8a):

- (8) To, čto ty vypil včera, bylo ...
 that what you_{SG} drank_{MASC.SG} yesterday was_{NEUT.SG}
- a. ... butylok pjat' ploxogo vina.
 bottles_{GEN.PL} five bad_{GEN.SG} wine_{GEN.SG}
 'What you drank yesterday was about five bottles of bad wine.'
- b.* ... vse pjat' butylok ploxogo vina.
 all_{NOM.PL} five bottles_{GEN.PL} bad_{GEN.SG} wine_{GEN.SG}

Strong quantifiers, as in (8b), are disallowed with cleft sentences.

Approximative inversion is also impossible in a strong topic (9a-b) and in many cases is odd as a (topical) subject (10a-b):

- (9) a.* Čelovek pjat', oni ešče ne prišli.
 persons_{GEN.PL} five they_{NOM.PL} still not arrived_{PL}
 'As for approximately five people, they still haven't arrived.'
- b.* Čelovek pjat', my ešče ne videli ix.
 persons_{GEN.PL} five we_{NOM} still not saw_{PL} them_{ACC}
 'As for approximately five people, we still haven't seen them.'

Sentences (10a-b) are ungrammatical when the inverted nominals have a cardinal reading (with no presupposition of a bigger set), but are normal with a quantificational/presuppositional reading:

- (10) a. Čelovek pjat' byli amerikancy.
 persons_{GEN.PL} five were Americans_{NOM.PL}
 'Approximately five of the people were Americans.'
- b. Ščenjat pjat' byli pušistye
 puppies_{GEN.PL} five were fluffy_{NOM.PL}
 'Approximately five of the puppies were fluffy.'

As evidenced by the required words *of the* in the glosses, the only acceptable interpretation in (10a-b) is that of a presumed larger set. Neither of these can have a cardinal meaning.

Two nominal expressions with approximative inversion seemingly cannot appear in a single clause simultaneously:

- (11) ??? Mužčin pjat' tancevali s ženščinami desjat'ju.
 men_{GEN.PL} five danced_{PL} with women_{INST.PL} ten_{INST}
 (Intended meaning:) 'Approximately five men danced with approximately ten women.'

Again, if we assume that both inverted nominal expressions are headed by weak quantifiers we can explain this phenomenon quite straightforwardly. Unselective binding is only possible with referentially determined nominals and nominals with approximative inversion are non-referential.⁴ We return to multiple-inversion examples like (11) in §2.2.2 below.

To sum up this line of reasoning, we can state that the functional projection the noun moves to must contain an existential quantifier as its head. And it sounds reasonable to paraphrase (12a-b) roughly as in (13a-b), respectively:

- (12) a. Na stole ležalo knjig pjat'.
 On table lay_{NEUT.SG} books_{GEN.PL} five
 b. My uvideli čelovek pjat' u moej mašiny.
 I_{NOM} saw_{PL} persons_{GEN.PL} five near my car
- (13) a. There were approximately five books lying on the table.
 b. There were approximately five people that we saw near my car.

2.2 The case against a (weak-)quantifier analysis

Recall the meaning of AI in more general terms: *There is approximate quantity of x {x = person, book, bottle, etc.}* It is absolutely inconceivable to imagine something like the following:

⁴ Due to space limitations we cannot present those arguments here. One of the present authors (M. Yadroff) back in 1994 proposed to the other (L. Billings) that inversions as in (i) are bad not because of prosodic weight of the preposition, but because prepositions like locative *okolo* 'near' often require a referential complement:

- (i) ??? okolo sosen desjati Intended meaning:
 near pines_{GEN.PL} ten_{GEN} 'near approximately ten pine-trees'

See Billings (1995: 172, fn. 206). See also §3 below and Billings and Yadroff (1996) regarding the word order.

There is an approximate entity such that it is n in quantity. As we see it, approximative inversion tells us something about the quantity (approximately five, ten, etc.), but not about the entity (*approximately persons, *approximately books, etc.). Why then is it the noun that moves to a QP, and not the numeral?

As we said above, the trigger for overt movement is the need to check off strong formal features. To explain movement of N° we postulated a formal feature [+APPR] in the bundle of formal features of the noun which moves. One can then ask whether it makes any sense for a noun to contain a feature [+APPR]. We think not.

2.2.1 Take a closer look at allegedly quantificational properties of approximative inversion. If such a nominal expression contains a (silent) quantifier, then we would expect to see certain scopal ambiguities in sentences with approximative inversion. For example, in sentences with overt quantifiers we have at least two readings, depending on which quantified NP takes wider scope:

(14) *Každyj mužčina vosxiščalsja pjat'ju ženščinami*
 every_{NOM.SG} man_{NOM.SG} adored_{MASC.SG} five_{INST} women_{INST.PL}
 v svoej žizni.
 in own life

- a. 'Every man adored five women in his life' (i.e., not necessarily the same set of women for every man).
- b. 'There are five women such that every man adored them in his life' (i.e., the same five women for every man).

Next we apply approximative inversion:

(15) *Každyj mužčina vosxiščalsja ženščinami pjat'ju*
 every_{NOM.SG} man_{NOM.SG} adored_{MASC.SG} women_{INST.PL} five_{INST}
 v svoej žizni.
 in own life

- a. 'Every man adored *approximately* five women in his life.' (i.e., not necessarily the same women for every man)
- b. Approximative counterpart of (14b), is **not** available.

The second interpretation with the approximative nominal taking wide scope over the universal quantifier is impossible in (15). This means that approximative inversion does not involve a quantifier, and therefore there is no scope interaction taking place in (15).

2.2.2 Now let us re-assess simple sentences with two AIs as in (11a). Under more careful observation, it turns out that there is nothing wrong with the *syntactic* well-formedness of (11); cf. (16):

- (16) My obmenjali butylok dvadcat' piva
 We_{NOM} traded_{PL} bottles_{GEN.PL} twenty beer_{GEN.SG}
 na kilogramm desjat' saxaru.
 for kilograms_{GEN.PL} ten sugar_{GEN.SG}
 'We traded approximately twenty bottles of beer
 for approximately ten kilograms of sugar.'

The problematic sentence in (11) differs from (16) in that it is the subject that involves approximative inversion in (11).⁵ To control for the influence of topichood on judgments about approximative inversion, imagine the following context:

- (17) a. Upon entering the Balkan restaurant what I saw was:
 b. Mužčin pjat' tancevali s ženščinami desjat'ju ...
 men_{GEN.PL} five danced_{PL} with women_{INST.PL} ten_{INST}
 'Approximately five men were dancing (a beautiful folk
 dance) with approximately ten women.'

We need to add one more pragmatic nuance: Since the NPs with AI are indefinite and non-referential they cannot yield an individual/list reading but only a group reading. The reciprocal pronoun *drug s drugom* 'with each other' forces an individual reading and the ungrammaticality of the following sentence shows that approximative reading is compatible only with a group reading: **Mužčin pjat' i ženščin desjat' tancevali drug s drugom*. 'Approximately five men and approximately five women danced with each other.' Again, it is a false move to appeal to quantifiers in order to explain the oddness of sentences with multiple AIs.

⁵ And as such, it sounds equally odd out of context to have a single AI in the subject (without presupposing a larger set of men):

- (i) ???Mužčin pjat' tancevali s desjat'ju ženščinami
 men_{GEN.PL} five danced_{PL} with ten_{INST} women_{INST.PL}

Cf. the following sentence, which sounds absolutely normal out of context and without any quantificational presupposition:

- (ii) Pjat' mužčin tancevali s ženščinami desjat'ju.
 five men_{GEN.PL} danced_{PL} with women_{INST.PL} ten_{INST}

A particularly convincing argument that approximative-inversion constructions don't involve a quantifier, but rather are "simple" indefinites, is inspired by Heim's (1982) analysis of indefinites. Heim argues that although indefinite nominals show scope ambiguities of the familiar sort, indefinites are not quantifiers, contrary to the tradition going back to Russell (1905). Heim notes that the quantificational character of indefinites depends on what quantifiers or adverbs of quantification happen to be in their vicinity. She gives the following examples which clearly show that indefinites "simply have no quantification force of their own at all, but are rather like variables which may get bound by whatever quantifier is there to bind them" (p. 127):

- (18)a. If a man owns a donkey, he always beats it.
 b. Sometimes, if a cat falls from the fifth floor, it survives.
- (19)a. For every man and every donkey such that the former owns the latter, he beats it.
 b. Some cats that fall from the fifth floor survive.

Russian approximative-inversion nominals behave the same way:

- (20)a. *Esli u čeloveka est' oslov pjat', on vseгда b'et ix.*
 if at man is donkeys five he always beats them
- b. *Inogda esli kotov pjat' padajut s pjatogo étaža,*
 sometimes if cats five fall from fifth floor
oni ostajutsja živymi.
 they remain alive
- (21)a. For every man and every group of approximately five donkeys, such that the former owns the latter, he beats them.
 b. Some groups of approximately five cats that fall from fifth floor survive.

Thus we see that, depending on context, approximative-inversion nominals can get different quantificational interpretations, and thus do not have any quantificational force on their own. Since approximative-inversion nominals behave exactly like indefinites, the functional projection a noun moves/inverts to is DP with a strong feature [-DEF] in its head. By the minimalist logic (Occam's razor), this means that such nominal expressions don't contain a QP.

2.3 Movement is to the determiner position

As (1b-c) above show, different registers of Russian allow the inverted noun to be on either side of the preposition. This is true, however, only of prosodically light prepositions. Prosodically heavy prepositions, such as *otnositel'no* 'regarding', cannot be preceded by the inverted noun (in either register). See Billings & Yadroff (1996) and Mel'čuk (1985: 153) for detailed discussion.

The very fact, however, that the inverted noun can overtake a preposition is strong evidence that prosodically light prepositions are located in a functional projection within the extended nominal complex. Furthermore, prosodically heavy prepositions most likely comprise separate lexical projections above the nominal complex—impermeable to movements such as approximative inversion.⁶

But where are functional prepositions located within the extended nominal projection? If we accept a view that they represent lexical support for morphological cases, then they occupy the same functional projection where the Case features are checked. Many linguists have dubbed this projection KP.⁷

Our principle claim is that the functional prepositions (P_{fcn}) in Russian occupy the head of DP.

Phenomena (diachronic as well as synchronic) of preposition multiplication can be straightforwardly explained if we assume that the P_{fcn} resides in D° :

First, in Old Russian it was common for appositive nominals to have reiterated prepositions, as (22), from the year 1582, shows:

- (22) ... Antoneji Jakov prišli v gorod v Veneceju
 [A. & J.]_{NOM} came_{PL} into city_{ACC.SG} into Venice_{ACC.SG}
 'Antonej and Jakov came into the city (of) Venice'

Each noun in the complex appositive nominal phrase has its own functional projection and as such must be headed by a DP projection which (according to our conjecture) hosts a functional preposition. At the same time, we haven't found doubling (or tripling) of lexical prepositions.

⁶For more detailed discussion of the two types of prepositions and their properties, see Fowler and Yadroff (1997).

⁷ See, e.g., Toman (1993). Interestingly, Lamontagne and Travis (1986) have attributed the KP idea to Ken Hale's lectures delivered at the 1980 (!) LSA Linguistic Institute in Albuquerque.

Second, preposition multiplication is attested in Old Russian if a noun's modifiers follow it, as (23), from 1353, shows:

- (23) ... *is kon' iz svoix iz ezdovyx*
 from horses_{GEN.PL} from own_{GEN.PL} from riding_{GEN.PL}
velel esm' dati ... pjat'desjat kon'
 ordered_{MASC.SG} am give_{INF} fifty horses_{GEN.PL}
 'from my riding horses I've ordered that fifty horses be given'

The modern colloquial language likewise attests such examples:

- (24) *Ot človeka ot ètogo nikogda ne*
 from person_{GEN.SG} from this_{GEN.SG} never not
ždal ničego xorošego
 expected_{MASC.SG} nothing good_{GEN.SG}
 '(I) never expected anything good from this person.'

Multiplication of the same prepositions (only functional ones, never lexical) is easily accounted for if we assume partial N°-movement within a DP, following Cinque (1994), with P_{fcn} occupying D°.

Third, the following examples show that preposition doubling can also be considered as a device for reinforcement of light prepositions (*s* 'with', *v* 'in'; scarcer: *k* 'to', *po* 'along', *na* 'on'):

- (25) a. *Volodimer" že sos vsemi knjazi ...* (12th century)
 Volodimer with all (the) princes
 b. *Izjaslav že s"s velikoju radostiju ...*
 Izjaslav with great joy
 c. ... *bitisja ss Volodimeriči*
 (to) battle with (the) descendants.of.Volodimer

Currently this kind of preposition doubling is widespread in Russian, Ukrainian, and Belarusian dialects.

The examples in (25) offer a formal solution: We can render preposition doubling by doubling a functional projection.

Returning to the word-order differences with light prepositions of approximative inversion in PPs in examples (1b-c) above, we propose that it reflects different strategies in building extended projections accepted by Standard Russian (no doubling) and Colloquial Russian (free doubling of functional categories).

To summarize this section, we have shown that approximative inversion does not involve a (weak) quantifier. Rather, like simple indefinites, approximative-inversion nominals merely involve feature-checking in a [-DEFINITE] determiner position.

If we accept this line of argumentation, we still feel uncomfortable with another semantic problem: When the noun in *knig pjat'* (literally: 'books five') moves, why doesn't it mean *'indefinite books in quantity five'? We return to this problem in §3.

3 The architecture of the (split) DP

In this section we address the two remaining issues: Which constituent undergoes the movement in approximative inversion and why some adjectives and not others appear to block such movement.

3.1 Adjectives block movement

If the quantified noun is modified by an adjective, then ordinary inversion does not occur. For example, the noun in (26a) is modified, and instead of inversion, as in any of (26b-e), a pleonastic count noun appears in the would-be landing site, as in (26f):

- (26) a. *pjat' starinnyx knig* 'five old/antique books'
 five old_{GEN.PL} books_{GEN.PL}
- b.* *knig pjat' starinnyx*
 books_{GEN.PL} five old_{GEN.PL}
- c.* *starinnyx pjat' knig*
 old_{GEN.PL} five books_{GEN.PL}
- d.* *starinnyx knig pjat'*
 old_{GEN.PL} books_{GEN.PL} five
- e.* *knig starinnyx pjat'*
 books_{GEN.PL} old_{GEN.PL} five
- f. *štuk pjat' starinnyx knig*
 items_{GEN.PL} five old_{GEN.PL} books_{GEN.PL}
 'approximately five old/antique books' [Mel'čuk (1985: 96)]

Any type of mere movement to pre-numeric position is ungrammatical—whether just the noun is inverted, as in (26b),⁸ just

⁸ Example (26b) is acceptable as the AI variant of *pjat' knig starinnyx* 'five books which are old', where the adjective is postposed. Both forms would require marked prosody (such as contrastive focus) on the adjective. See (29b) below.

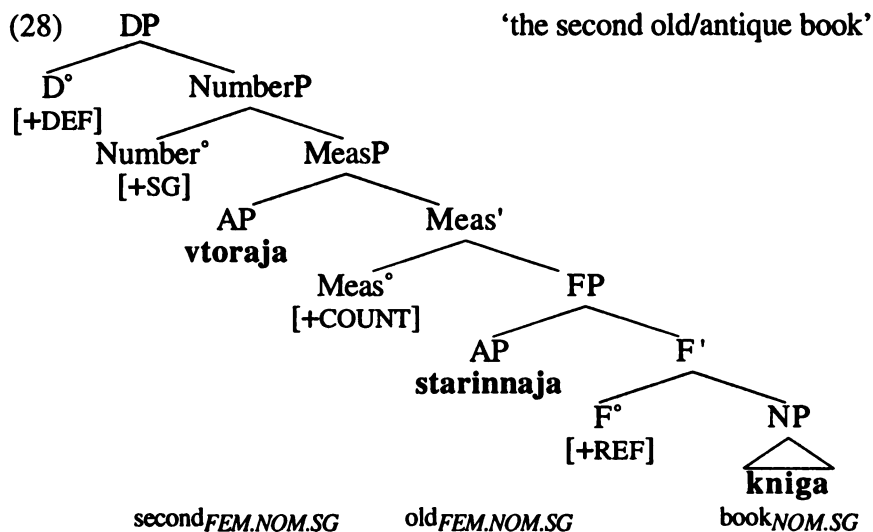
the adjective is inverted, in (26c); or both words are inverted, in (26d-e). Instead of inverting one or more of these words, the strategy employed by structures like (26a) is shown in (26f), with a pleonastic count noun, *štuk* 'items', occupying the position the noun would normally invert to if there were no adjective.

3.2 Ordinal numerals

Let's now consider examples with ordinal-numeral adjectives.

- (27) Otvet prišel den' na vos'moj.
 answer_{NOM.SG} arrived_{MASC.SG} day_{ACC.SG} on eighth_{MASC.ACC.SG}
 'The answer arrived approximately eight days later.'

Since ordinals are morphologically adjectival, the natural assumption is that it is not adjectives themselves that block movement, but their position in the structure. Accepting the proposal by Cinque (1994) that adjectives occupy specifier positions of functional projections, we hypothesize that ordinal adjectives are located in SpecMeasP, but that qualitative adjectives like *starinn-* 'old/antique' occupy the specifier of some lower functional projection, FP, as shown in (28):



As an argument for placing these two classes of adjectives as in (28), it is worth noting that the reversed order is ungrammatical: **starinnaja vtoraja kniga* *'the old/antique second book'.

The idea that F° contains formal features pertaining to referentiality of a lexical noun looks attractive because in this way there is a simple explanation for blocking effects: Any time an adjective (or actually any modifier) requires the lexical noun to be interpreted as referential, blocking effects are encountered and ungrammaticality results. This provides a reasonable way of distinguishing restrictive from appositive modifiers. We thus predict that restrictives are prohibited with approximative inversion, but appositives are fine. This is exactly what we observe in Russian:

- (29) a.* Knig pjat', kuplennyx včera, ležali na stole
 books_{GEN.PL} five bought_{GEN.PL} yesterday lay_{PL} on table
 'Approximately five books bought yesterday lay on the table.'
- b. Knig pjat' starinnyx i očen' dorigix
 books_{GEN.PL} five antique_{GEN.PL} & very expensive_{GEN.PL}
 ležali na stole
 lay_{PL} on table
 'Approximately five old/antique and very expensive books
 lay on the table.'

Moreover, we observe that approximative inversion is bad if modified by relative clauses with *kotor-* 'which', but are far better if the relative is with *čto* 'that'. Some speakers don't fully accept (30b) because *čto*-relatives are on the wane in Russian; nevertheless, these speakers still find a sharp acceptability contrast with (30a). Again this fact points neatly to the same distinction we have made above:

- (30) a.* knig pjat', kotorye my kupili včera
 books_{GEN.PL} five which_{ACC.PL} we_{NOM} bought_{PL} yesterday
 'approximately five books *which* we bought yesterday'
- b. knig pjat', čto my kupili včera
 books_{GEN.PL} five that_{ACC} we_{NOM} bought_{PL} yesterday
 'approximately five books *that* we bought yesterday'

The contrast in (30a-b) is explained if relatives in *kotor-* 'which' entail a [+REF] specification, while those in *čto* 'that' are [-REF]. Other tests, however, do not clarify matters. For example, possessives, thought to be used only with referential nouns, can co-occur with approximative inversion, as shown in (31a-b):

- (31) a. Knig pjat' moego druga tak i ostalis' u menja.
 books_{GEN.PL} five my_{GEN.PL} friend_{GEN.PL}
 'Approximately five books of my friend's got left at my place.'
- b. Knig pjat' moix tak i ostalis' u nego.
 books_{GEN.PL} five my_{GEN.PL}
 'Approximately five books of mine got left at his place.'

But demonstratives cannot be used with approximative inversion:

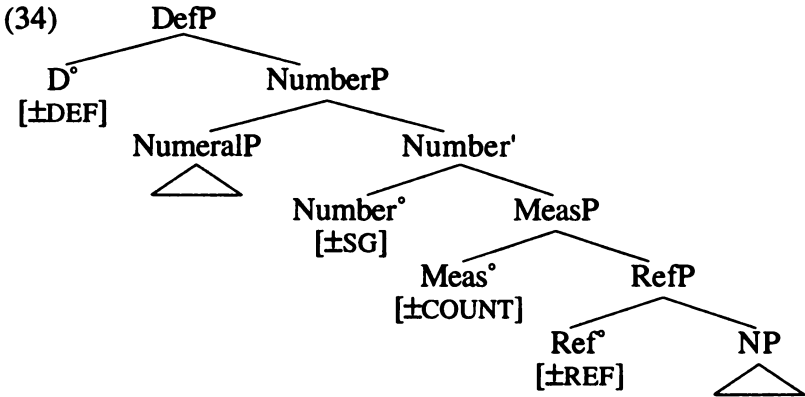
- (32) a.* Knig pjat' étix ležali na stole
 books_{GEN.PL} five these_{GEN.PL} lay_{PL} on table
- b.* Korov desjat' tex paslis' na lugu.
 cows_{GEN.PL} ten those_{GEN.PL} grazed_{PL} on meadow

The data in (31) and (32) can be accounted for if demonstratives are required to be [+REF], while possessive are allowed to be [-REF].

Our claim that demonstratives occupy a functional projection other than the upper DP is supported by the co-occurrence of demonstratives and definite articles. Moreover, the order of these two categories is not universally the same; see Giusti (1995):

- (33) a. afto to vivlio Modern Greek
 this the book (Dem Art N)
- b. sa mandrinn Old Icelandic
 this man+the (Dem N+Art)
- c. pan wig jainan Gothic
 the way this (Art N Dem)

Another reason for postulating a separate functional projection and positioning it relatively low in the structure is the widespread phenomenon of postnominal demonstratives (some Romance, Balkan, Slavic and Celtic languages, as well as Hebrew; for detailed discussion of this phenomenon in Spanish, see Brugè 1996). The assumption of N^o-movement à la Cinque leads us to postulate a low-situated functional projection hosting demonstratives. Since the primary function of demonstratives is referentially deictic, the functional projection they reside in must contain a feature [+REF]. So for convenience we propose to call it RefP (and the upper DP, DefP). The architecture of nominal phrases emerges as follows:



However the question raised at the beginning of this section still remains unanswered: What moves to D° in Russian approximative-inversion constructions?

3.3 Pleonastic nouns as an argument for Meas-movement

As we show above, there is no consistent pattern as to what blocks N°-movement and how the blocking mechanism works. An interesting clue, however, is given by approximative inversion with the so-called pleonastic count nouns in nominals quantified by paucal numerals. So far in this paper we have avoided discussion of the morphological marking of the words involved in approximative inversion.

All the examples above with numerals show the quantified noun in the GEN.PL; such is not the case, however, with every numeral in the language. The so-called paucal numerals, those less than 5 in cardinality, trigger a GEN-case form in the noun which is often called the GEN.SG, but which differs from non-quantificational GEN.SG in a few noun stems. (For ease of exposition, we use the labels “GEN.SG” and “GEN.PL” here.)

Non-approximative (35a) has a paucal numeral with a GEN.SG noun. Applying approximative inversion, in (35b), shows the same GEN.SG form of the noun. In non-approximative (35c) a prenominal adjective has been added. As we show above in (26f), such adjectives prohibit the lexical noun from appearing pre-numerically in the approximative form. Instead, a pleonastic count noun appears there, as (35d) shows. Because (26f) has a non-paucal numeral, however, both the nouns there (pleonastic and lexical) are

in the GEN.PL; in (35d), however, the pleonastic noun is GEN.SG, while the lexical noun has GEN.PL morphology.

- (35) a. My kupili tri plat'ja.
 we_{NOM} bought_{PL} three dress_{GEN.SG}
 'We bought three dresses.'
- b. My kupili plat'ja tri.
 we_{NOM} bought_{PL} dress_{GEN.SG} three
 'We bought *approximately* three dresses.'
- c. My kupili tri krasivyx plat'ja.
 we_{NOM} bought_{PL} three pretty_{GEN.PL} dress_{GEN.SG}
 'We bought three pretty dresses.'
- d. My kupili štuki tri krasivyx plat'ev.
 we_{NOM} bought_{PL} item_{GEN.SG} three pretty_{GEN.PL} dresses_{GEN.PL}
 'We bought *approximately* three pretty dresses.'

The point of (35d) is that the morphology assigned by the paucal numeral is exhibited not by the lexical noun *plat'ev*, but by the pleonastic count noun *štuki*. This GEN.SG morphology shows that the pleonastic noun has nonetheless moved from Meas°.

Why does the lexical noun change its Number feature to PL in (35d)? The simple answer is that it doesn't. A lexical noun is always PL, and it never moves in approximative inversion. In examples like (35a-c), N° is simply phonologically null. What moves in Russian approximative inversion is Meas°, which in most cases is homophonous with a lexical noun.

By making this assumption, we can solve a mystery in the agreement pattern for adjectives in cardinal expressions in Old Russian. Before the dual number was lost and a separate word class of Numerals was established, Old Russian had treated *dva/dvě* 'two', *tri* 'three' and *četyre* 'four' as adjectives (but other cardinals were ordinary nouns, which triggered the adnominal GEN.PL). Nouns with *dva/dvě* 'two' took the DUAL number (36a) and with *tri* 'three' or *četyre* 'four', the PL (36b):

- (36) a. dva duba, dvě sestřě, dvě poli
 two oaks_{NOM.DUAL} two sisters_{NOM.DUAL} two fields_{NOM.DUAL}
- b. tri/četyre gody, tri/četyre čeloveki
 three/four years_{NOM.PL} three/four persons_{NOM.PL}

The mystery is that the other (non-cardinal) adjectives were always morphologically GEN.PL when following the nouns:

- (37) a. dva kovša zolotyx (1389)
 two ladles_{NOM.DUAL} golden_{GEN.PL}
- b. tri gorody velikix (1457)
 three towns_{NOM.PL} big_{GEN.PL}

This agreement pattern is now easily explainable with our assumption of a null lexical noun. Adjectives agree with null nouns and not with measure words. The same pattern has remained up to now, but with the noun following the adjective—both in the GEN.

Now let's recall our question about semantic interpretation of the approximative-inversion construction. After considering the DP/QP issues, we asked: When we say *approximately five books* does it mean *'indefinite books in quantity five'? Certainly, it doesn't. The lexical noun, even if it is non-referential and indefinite, cannot be interpreted as providing the approximative meaning. However, if we assume that the item which moves upward (to check-off the feature [-DEF] in D°) is the measure word, we immediately get the right interpretation: an indefinite measure of (the number of) objects.

4 Perspectives for further research.

- We have shown in this paper that the functional extension of NP in Russian must be headed by a DP and proposed that D° contains only the formal feature [±DEFINITE].
- We have shown that the functional extension of NP in Russian must contain a second DP-like projection situated immediately above a lexical NP, and proposed that this projection contains only a single formal feature [±REFERENTIAL]. We call them as DefP and RefP.
- In our previous work and in this paper we have shown that the extended nominal projection in Russian must contain a functional category with a single formal feature [±COUNT]. This is MeasP.
- And finally we have argued that there is no N°-movement in Russian approximative inversion and that what moves in this construction is a lexicalized functional projection, Meas°.

We believe that the syntactic mechanics and the syntactic structures invoked in this paper are truly universal among

languages. Therefore what we found in Russian should be a valid result for other languages. Here are some examples for extension of our analysis to other languages:

The proposed structure for nominal phrases may shed new light on a classic problem in Mainland Scandinavian nominal syntax: double definiteness. The core facts are the following:

- (38) a. (*den) bok+en (*the) book+the
 b. *(den) nya bok+en *(the) new book+the

In (38a), the free definite article is excluded, but it is obligatory in (38b) where the noun is modified by an adjective.

Another intriguing problem which can be viewed in a new light after our proposals is Holmberg's (1993) observation that there exists a kind of partial complementary distribution between case morphology and articles among the European languages; cf. also Toman (1993). Those languages which have a poor system of articles (including most of Slavic, Finno-Ugric and Baltic) strongly tend to have a rich system of case morphology. Correspondingly, almost all the languages which have a poor system of case morphology (Eastern South Slavic, Celtic, most of Romance, and much of Germanic languages) have a rich system of articles.

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