CURRENT ISSUES IN GENERATIVE LINGUISTICS
Syntax, Semantics, and Phonology
edited by Joanna Błaszczak, Bożena Rozwadowska, and Wojciech Witkowski
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About this volume

*Current Issues in Generative Linguistics: Syntax, Semantics and Phonology* (CIGL in short) is a collection of papers dealing with various aspects of syntax, semantics and phonology. The spectrum of the issues covered in this volume is quite broad: from A/A’-effects in topic fronting through epistemic modals to phonological opacity. Likewise, the range of the discussed languages is fairly impressive: from English (including both Old and Middle English), French, Spanish, Serbian, Macedonian, Polish (including Old Polish or even Proto-Slavic) through various Swiss German dialects to Turkish, Chilean (Spanish) and Japanese.

The volume is divided into three parts: syntax, semantics (or syntax-semantics) and phonology. The first, syntactic part comprises the following contributions:

**Ángel Jimenez and Selçuk İşsever** explore the A/A’-effects exhibited in topic fronting constructions in Spanish and Turkish. Although typologically quite distinct, these languages show similar properties when topics are preposed, especially as regards the binding interpretation of the fronted constituent. Anaphors may either display argumental or non-argumental properties: binding improvement and reconstruction. To explain the two effects, the Authors propose an analysis of fronted topics based on movement to Spec-TP, as a consequence of feature inheritance. The different binding effects are accounted for in terms of adjunction of anaphoric/pronominal features to functional heads, namely $V^0$ and $T^0$. It is also argued that the interaction of information focus and binding is crucial to predict the interpretive properties of displaced elements both in Turkish and Spanish. This analysis dispenses with the traditional distinction between A- and A’-positions.

**Nataša Knežević** reports the findings of an experimental study designed to investigate the range of interpretations that sentences with two numerals allow in both child and adult Serbian. Such sentences are potentially at least four-ways ambiguous, giving rise to scope-dependent (distributive) and scope-independent (collective/cumulative) readings. The main experimental findings are that (i) Serbian adults, unlike English adults and unlike Serbian and English children, reject distributive reading; and (ii) that Serbian children, unlike English children and unlike Serbian and English adults, show a strong tendency to reject collective readings. There is thus variation with respect to both age and language. The Author accounts for (i) by arguing that there is an overt distributive marker in Serbian which adults require but children do not. Regarding (ii), she argues that the difference between Serbian and English is due to the morphosyntactic proper-
ties of Serbian numerals, namely the opposition between paucals and collective numerals. Paucals have a singular nominal restriction and trigger plural verbal agreement, while collective numerals have a plural nominal restriction and trigger either singular or plural verbal agreement. Serbian children are sensitive to this morphosyntactic difference regarding numeral interpretations.

Slavica Kochovska discusses two types of left-dislocated constructions in Macedonian each of which is characterized by having a (direct object) DP in a clause-initial position, occurring either with or without a clitic in the IP. She shows that such clause-initial DPs can be distinguished derivationally and thus mapped onto two different constructions, identified as Clitic Left Dislocation and Topicalization. In particular, she argues that CLLDed DPs are base-generated in their surface position, while topicalized DPs are derived by movement. Building on the derivational differences, the two constructions are also shown to differ in terms of their semantic and pragmatic properties.

Katarzyna Miechowicz-Mathiasen provides a syntactic analysis of Polish cardinal numerals >5 with reference to their history and development. In particular, she addresses the issue of the so-called Accusative Hypothesis according to which numeral expressions with >5 are intrinsically accusative (Malecki 1863, Krasnowolski 1897, Szober 1928, Przebierski 1996 and 2004, Franks 2002). Despite it being a contentious issue, the Accusative Hypothesis has been used by some as an explanation to the puzzling syntax of these numeral expressions (Franks 2002, Przebierski 1996 and 2004, Rutkowski 2007). The Author points out that none of these proposals goes beyond the mere statement of the hypothesis or answers the question pertinent to the source of acc, thus the Author’s aim is to provide such an answer. The proposed analysis is based on Pesetsky and Torrego’s (2004) idea according to which all structural case is a result of tense checking. The Author argues that there is a special tense head introducing numeral expressions with >5, a (null) light p, whose selectional properties are sensitive to the presence of a lexicalised Num – the head which these numerals are taken to lexicalize.

Kathleen O’Connor examines the presence of floating quantifiers in non-finite appositives consisting of an NP, PP or AP predicate. Through an examination of the positions occupied by FQs with respect to adverbs, she shows that appositives contain a number of DP-related projections that can host FQs and a PRO subject. Her analysis thus provides evidence that appositives do not consist of a single constituent, but are rather more clausal in nature, approximating the syntactic structure of finite clauses.

Yurie Okami addresses the fact that some Japanese adjectives allow the alternating forms with or without -no in the adnominal modification, but others not. She argues that with its peculiar interpretations, the adjective with -no represents the indirect modification in the sense of Cinque (2010). Moreover, -no is not a mere case marker or modifying marker, but is a realization of the classic copular verb -nari in Japanese. The Author also proposes that the structure of the adjective with -no involves pro that is base generated in the subject position of the relative clause. With this structure, she shows that a relative clause in Japanese is not a relative clause in terms of Kayne (1994), but a pure sentential modifier that is merged in the designated specifier position of NP as adjunct.

Jacek Witkoś and Sylwiusz Zychliński discuss adjunct control in Polish with reference to two empirical domains of control, i.e., control into adverbial clauses and control into gerunds. As each of these two control domains exemplifies different syntactic characteristics, they argue that control into adverbial clauses is a case of either Obligatory or Nonobligatory Control, depending on the optional placement of the logical operator in the lexical Complementizer (żeby [so-that] and its phonetic variants aby, by), whereas control into gerunds instantiates a case of Obligatory Control. The correlation between the interpretation of PRO in these constructions and the passive, mediated by the smuggling movement of the passive constituent, is taken to be an interesting and novel diagnostic for the attachment site of a particular type of an adversative domain.

The second, semantic (syntactico)-semantic part contains the following contributions:

Adam Bialy investigates the distribution of Polish verbal prefixes from the perspective of the more general division of Slavic prefixes into the lexical and the superlexical type (Pantecheva 2007, Romanova 2004, Svenonius 2004, et al.). He questions a fixed linking of a particular prefix with one of the types since there is quite a lot of syncretism of form between the two types of prefixes as well as corresponding prepositions. The Author argues that the decisive role in the classification of prefixes is played by the aspectuality of the verb to which these are assigned. The overall interpretation is compositional and is a result of the delimitative function of the prefix and the aspectual entailment of the verb.

Bożena Cetnarowska and Helen Trugman consider the status of classifying adjectival (CAs) in Polish with respect to morphological, syntactic and semantic typologies, focusing on the semantic classification of adjectives proposed in Partee (2007, 2010). They provide a new typology of CAs, in which CAs form a continuum of modifiers in noun phrases ranging from lexical idioms to free syntactic constructions. The Authors show that this continuum of CAs cuts across all adhesive types identified by Partee (ibid.), rather than forms one discrete class of modifiers. It also neatly correlates with the three types of N-CA combinations suggested in Cetnarowska, Pysz and Trugman (2011, in press). The proposal is validated by a series of syntactic tests.

Ewelina Frąckowiak provides evidence in support of the imperfective being a semantically vacuous morpheme whose presence is guaranteed by specific conditions that rule out the perfective. She enriches the recent discussions concerned with the puzzle of how to account for various readings of the imperfective (Cipria and Roberts 2000, Haegard 2006) by providing a semantic analysis of an interpretation not attested in languages
like French, Italian and Spanish on which the discussions have focused so far. The Author argues that the Russian and Polish patterns dubbed as Existential Factual Imperfectives (cf. Gronn 2003) carry a silent Epistemic Modal that selects the imperfective due to its right semantic type: <s,t> in contrast to the <o> type of the perfective.

Patrycja Matera deals with some selectional properties of predicates of impersonal body sensation expressions (IBSE). Contrary to the well-known properties of such predicates, like 3rd neuter singular agreement or absence of a nominative argument, presence of non-selected non-nominative elements (dative, accusative DPs or pronouns) seems to remain more controversial. The Author shows that it is possible to specify the context in which these elements may be omitted: first, it is necessary to opt for a finer-grained typology of nominativeless sentences, and second, one must take into consideration the interaction between the aspectual nature of the predicate itself and the non-selected arguments present in the narrow context. The latter fact sheds light on a notion of a Causer-PP that appears as an adjunct within some nominativeless sentences and that reveals more about the nature of impersonal sentences.

The third, phonological part consists of the following contributions:

Karolina Broś analyses the interplay of coda /s/ aspiration and deletion in Chilean, pointing to non-surface apparent opacity at the word boundary when faced with misalignment between prosodic and morphological constituents caused by resyllabification. She tests several OT strategies to account for these processes and concludes that neither standard OT nor opacity-centered sympathy is a suitable mechanism for addressing the issue. They are not equipped with sufficient means to remove all of the obstacles posed by the Chilean data. The Author argues that the only viable option is to draw on the clear distinction between the lexical and post-lexical levels observed in the Chilean data, which calls for the distinction between word-level and phrase-level phonology within OT.

Artur Kijak discusses the intimate phonological relationship between two articulatorily unrelated consonant classes: velars and labials. He advocates the solution put forward in Backley and Nasukawa (2009) who argue for the presence of the element ǀUǀ in the content of both velars and labials. The historical data he analyses provide robust evidence for their proposal. More specifically, the Author looks at the development of the u-glide in front of the velar spirant in Old English and the Middle English diphthongization before the voiceless and voiced velar fricative. Moreover, he discusses the labialization of the velar fricative in the word-final position and explores the problem of historical vocalization which affected the velarized [l] and led to various qualitative and quantitative vocalic developments. The Author concludes that the relationship between labials and velars can be easily captured if one postulates the presence of ǀUǀ not only in the content of labials and [a, w] but, first and foremost, in velars. What differentiates both categories is the status played by this element, i.e., in labials ǀUǀ functions as the head, while in velars it is an operator.

Regula Sutter discusses Bromberger and Halle’s (1989) claim that phonology is fundamentally different from syntax. Their reason is that rule ordering is a necessary part of phonology, but not of syntax. Their only synchronic evidence, Canadian Raising, was shown to be invalid by Kaye (1990, 2012). The Author shows that another piece of purported evidence, namely Kiparsky’s often cited rule ordering in two dialects of Swiss German fares no better. The two rules that allegedly need to be ordered turn out to be factually wrong. The lowering rule does not properly reflect the data it intends to cover. Umlaut is not a phonological rule – there is no possible phonological context that would render this rule acceptable. Additionally, the proposed change (vowels are fronted) does not cover all alternations subsumed under the term umlaut. If neither of the rules is phonological, then nothing remains to be ordered. The Author concludes that Kiparsky’s example submits no evidence in favour of Bromberger and Halle’s claim. There is no reason to assume that phonology and syntax should be fundamentally different.

Joanna Błaszczak, on behalf of the editorial committee
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1

Deriving A/A’-Effects in Topic Fronting: Intervention of Focus and Binding

Angel L. Jiménez-Fernández and Selçuk İşsever

In this work we explore the A/A’ effects exhibited in topic fronting constructions in Spanish and Turkish. Although typologically quite distinct, these languages show similar properties when topics are preposed, especially as regards the binding interpretation of the fronted constituent. Anaphors may either display argumental or non-argumental properties: binding improvement and reconstruction. To explain the two effects we propose an analysis of fronted topics based on movement to Spec-TP, as a consequence of feature inheritance. The different binding effects are accounted for in terms of adjunction of anaphoric/pronominal features to possible heads, namely $v^0$ and $T^0$. We also argue that the interaction of information focus and binding is crucial to predict the interpretive properties of displaced elements both in Turkish and Spanish. This analysis dispenses with the traditional distinction between A- and A’-positions.

Keywords: topic fronting, focus, binding, anaphoric features, feature inheritance

1 Introduction

In line with Chomsky (2008), Richards (2007), and Miyagawa (2005, 2010), Jiménez-Fernández (2010, 2011) argues for the three-fold classification of languages shown in (1), based on feature inheritance. In this typology, languages are parameterized as to whether features of $C^0$, agreement- ($\phi$) and/or discourse-features ($\delta$), are inherited by $T^0$.

(1) Feature Inheritance (adopted from Jiménez-Fernández 2010, after Miyagawa 2005)

a. $C^0 \phi \rightarrow T^0 \delta \ldots$ (disc-prominent: e.g., Japanese, Korean)

b. $C^0 \delta \rightarrow T^0 \phi \ldots$ (agr-prominent: e.g., English and most Indo-European languages)

c. $C^0 \delta \rightarrow T^0 \phi, \delta \ldots$ (disc-prominent, agr-oriented: e.g., Spanish, Turkish, Greek)

A language is discourse-prominent if $T^0$ inherits $\delta$-features (1a), whereas inheritance of $\phi$-features makes a language agreement-prominent (1b). On the border line, languages such as Spanish and Turkish are both discourse-prominent and agreement-oriented (1c). Assuming a movement analysis of topic fronting (Belletti 2005, Ccechetto 2000, Haegeman 2006, López 2009, Rizzi 1997), in discourse-prominent languages, topics are preposed to Spec-TP once $\delta$-features are inherited by $T^0$. As Spec-TP is traditionally described as an A-position (Lasnik 1999, 2003), this is predicted to give rise to A-effects, such as binding improvement. Consider the examples below, where topic fronting of an antecedent can save the sentences in Spanish and Turkish, respectively:

(2) a. *Su vecino vio a Susanai. (Spanish)
   self neighbor see-pst.3s to Susanai

b. [A Susanai] la vio su vecino $\xi$.
   'Susanai was seen by her neighbour.'

(3) a. *Kendi komşusu Işık’ı gördü. (Turkish)
   self neighbour-poss Işık’ACC see-pst.3s

b. [Işık’ı] kendii komşusu $\xi$ gördü.
   'Işık was seen by her neighbour.'

If topics undergo movement to Spec-TP in languages like Turkish and Spanish, A’-effects such as reconstruction are expected not to be displayed, contrary to facts:

(4) a. Adam Kendi-Nei kitap al-di.
   man self-dat book buy-pst.3s

b. [Kendi-nei] adam $\xi$ kitap al-di.
   'For himself, the man bought a book.'

(5) a. Su vecino Susanai lo vio ayer.7 (Spanish)
   to self neighbour Susanai CL see-pst.3s yesterday

   'Susanai saw her neighbour yesterday.'

Thus, in Turkish/Spanish-type discourse-prominent languages topic fronting displays both A- and A’-effects with respect to anaphor binding as seen in (2) through (5). Although the classical approach to this phenomenon suggests that topic fronting/scrambling can target both Spec-TP and Spec-CP in the same language (Mahajan 1990, Miyagawa 2003, among others), A- and A’-positions respectively, there are also studies proposing a unified approach to A/A’-distinction. Saito (2003) argues for a unitary A-movement based on the derivational selection of lexical features. Takahashi (2006), on the other hand, claims that the A/A’-distinction can be captured if A-movement optionally leaves a copy, whereas copies left by A’-movement are obligatory. Bearing on the same issue, Miyagawa (2010) proposes a phase-based approach, the Phase-Based Characterization of Chains (PBCC), according to which a full copy of a moved item must be available for interpretation if the movement crosses a transfer domain, whereas movement within the
the binder and the bindee’s [+anaphor] feature in narrow syntax; finally, section 5 summarises our findings.

2 The data and the A-A’ distinction

2.1 A-movement effects

Both in Turkish and Spanish the binding relation between an antecedent subject and an anaphoric object is satisfactorily established if the former precedes the latter (see Case 1 in (6)), which is a totally expected scenario for binding relations to hold. In this scenario, we also expect that moving the anaphoric object in front of the antecedent subject will cause ungrammaticality. The examples given in (7) (Case 2) show that this expectation is borne out (capitals indicate IF here and throughout the paper).

\[(6) \text{ Case 1: antecedent subject > anaphoric object} \]
\[\text{a. } \text{Susana} \_ \text{vio } \text{A SUSANA, } \_ \text{.} \]
\[\text{b. } \text{Işık} \_ \text{KENDİ KOMŞU-SU-NU } \text{gör-dü.} \]
\[\text{Susana/Işık saw her neighbour.} \]

\[(7) \text{ Case 2: preposed anaphoric object > antecedent subject} \]
\[\text{a. } \text{*[A su vecino]} \_ \text{lo vio SUSANA, } \_ \text{.} \]
\[\text{to self neighbour see-pst.3s SUSANA, } \_ \text{.} \]
\[\text{b. } \text{*[Kendi, komşu-su-nu, IŞIK, } \_ \text{gör-dü.} \]
\[\text{self neighbour-poss-acc see-pst.3s} \]
\[\text{Her neighbour was seen by Susana/Işık.} \]

In contrast to Case 2 in (7), an antecedent object undergoing movement in front of an anaphoric subject can save the binding relation between the two elements (see Case 4 in (9)), which cannot be established before the movement takes place (see Case 3 in (8)).

\[(8) \text{ Case 3: anaphoric subject > antecedent object} \]
\[\text{a. } \text{Su vecino vio } \text{A SUSANA, } \_ \text{.} \]
\[\text{self neighbour see-pst.3s to Susana} \]
\[\text{b. } \text{Kendi, komşu-su } \text{IŞIK, } \_ \text{gör-dü.} \]
\[\text{self neighbour-poss-acc see-pst.3s} \]
\[\text{Lit. Her neighbour saw Susana/Işık.} \]

\[(9) \text{ Case 4: preposed antecedent object > anaphoric subject} \]
\[\text{a. } \text{[A Susana, ]_a vio } \text{SU, VECINO } \_ \text{.} \]
\[\text{to Susana cl see-pst.3s self neighbour} \]

\[\text{It is standardly assumed that Clitic Left Dislocation (CLLD) involves the CP domain in Romance, either via Merge (Cinque 1990, Frascarelli 2007) or via Movement (Cecchetto 2000, Denotore and Fernández-Soriano 2009, Haegeman 2006, et subseq.) (see also Kochovska 2010 for a merge-based analysis of CLLD in Slavic languages). In our work, we explore another possibility, namely CLLD-ed topics are located in the TP area. Within a merge-based framework, many proposals point to the fact that CLLD is identified with the TP/IP region (Barboa 2001), whereas CLLD-ed topics moving to Spec,TP is the analysis pursued by Zubizarreta (1998), Hilt-Motayanyane (2002), Cornilesuciu (2004), Jiménez-Fernández (2010, 2011), et.} \]

\[\text{It is last type of analysis that we favour in our work. We claim in Spanish at least some types of CLLD-ed topics move to Spec,TP in the typology of topics proposed by Frascarelli and Hinterhölzl (2007), the type of topics that we focus on is the familiar topic. Familiar topics are identified as "a given or accessible (cf. Chafe 1987) constituent, which is typically depressed and realized in a pronominal form (Pesetsky 1987); when a familiar topic is textually given and d-linked with a pre-established aboutness topic, it is defined as a continuing topic (cf. Givón 1983)" (Frascarelli and Hinterhölzl 2007: 87).} \]

\[\text{Yet, differing from Takahashi/Miyagawa-style approaches that rely on copy identification, and limiting our discussion basically to anaphora binding environments, we claim that a simpler account is possible; one which is based on (LF-) adjunction of anaphoric/pronominal features to functional heads, namely v0 and T0 (see Avrutin 1994, Chomsky 1995, Hestvik 1992, Lebeaux 1983, Pica 1987, Reinhart and Reuland 1991, among others). Revealing the inaccuracy of the PBCC, we also show that the interaction of focus and binding is crucial to predict the interpretive properties of displaced elements both in Turkish and Spanish, which are traditionally accounted for by making a distinction between A-position and A’-position.} \]

\[\text{As we discuss in section 4, binding interacts with information focus (IF) both in Turkish and Spanish (İşsever 2007, Kural 1992, Suher 2000, Zubizarreta 1998) – see Lahousse (2009) for a similar claim based on French data. Hence, it is necessary to take IF into account when we consider binding relations in the two languages. In both languages primary sentential stress, which marks IF, is assigned to the most deeply embedded category by the Nuclear Stress Rule (NSR) (Cinque 1993), which we indicate by using capitals throughout the paper.} \]

\[\text{The outline of this chapter is as follows: in section 1, some preliminary remarks concerning feature inheritance and the A-A’ distinction are addressed; in section 2, we discuss the data and the A-A’ distinction in topic preposing in Spanish and Turkish, especially as far as binding ameliorations vs. reconstruction is concerned; section 3 shows the inaccuracy of Miyagawa’s PBCC; section 4 develops our proposal that anaphors have a [+anaphor] feature adjoining to the immediately higher functional category: T0 or v0; binding improvement and reconstruction are explained by the relative position of} \]
2.2 A'-movement effects

As we have seen in (4) and (5), topic fronting can also display A'-movement effects in both languages. This aspect of the languages at issue is a result of (i) the interplay between IF and binding both in Turkish and Spanish topic fronting, and (ii) multiple topic fronting in Clitic Left Dislocation (CLLD) constructions in Spanish and in multiple topics in Turkish.

First, let us see how IF interacts with binding in topic fronting constructions. In all the ungrammatical examples in (8) the binding relation between the anaphor and its antecedent can be saved if the antecedent is defocused. Consider the examples given below, where IF falls upon the adverbs ayer and dün [yesterday] in (11)–(12), and upon the bare object kitap [book] in (13):

(11) a. [A su, vecino] lo vio Susana, t ayer.
    to self neighbour cl see-pst.3s yesterday Susanayesterday
    ‘Susana/Işık was seen by her neighbour.’

(12) a. [Kendi, komşu-su-u] Işık, t dün gör-dü.
    self neighbour-poss-acc Işık yesterday see-pst.3s
    ‘Susana/Işık was seen by her neighbour yesterday.’

As shown in (6)–(10), topic fronting in Turkish and Spanish can affect the binding relation between an anaphor and its antecedent, which is an A-movement effect.

Second, multiple topic fronting in CLLD constructions in Spanish displays a very puzzling A'-effect if both the anaphor and the antecedent move to multiple Specs of T' (Jiménez-Fernández 2011). This is shown in the examples given below. Surprisingly, the relative ordering between the anaphor and the antecedent does not affect the binding relation between them, which is unexpected, considering the A-status of Specs of T'.
On the other hand, the data in 2.2 have shown that A'-movement effects are also at stake. We saw in that section that (i) both configurations in (18) can be rendered grammatical if the crossed category is not IF-marked (see (19a)), and (ii) both the binder and the bindee occupy multiple Specifiers of T*, regardless of the relative order between them (see (19b–c)).

(19) A'-movement effects
   a. \[v \gamma [\eta]_{\text{subject}} [\eta]_{\text{adj}} [\eta]_{\text{adj}} [\eta]_{\text{adj}} [\eta]_{\text{adj}} \] (see (11), (13b))
   b. \[v \gamma [\eta]_{\text{subject}} [\eta]_{\text{adj}} [\eta]_{\text{adj}} [\eta]_{\text{adj}} \] (see (14a), (15a), (16b), (17c))
   c. \[v \gamma [\eta]_{\text{subject}} [\eta]_{\text{adj}} [\eta]_{\text{adj}} [\eta]_{\text{adj}} \] (see (14b), (15b), (16a), (17b))

The pictures sketched in (18) and (19) raise the following questions:

[A] If Spec,TP is an A-position, why should its syntactic status be affected by
   i. the interaction between topic fronting and IF?
   ii. multiple fronting of the binder and bindee?

[B] Why does IF interact with binding?

In the next sections we discuss the issues surrounding these questions and present our proposal accounting for the puzzling A/A'-movement effects in topic fronting environments in Turkish and Spanish.

3 The inaccuracy of the PBCC

As mentioned in the introductory section, to account for binding relations in topic fronting and/or scrambling, some studies have relied on optionality of copies under movement. For example, Takahashi (2006) suggests that A- and A'-movement differ in that copies left by the former are optional while those of the latter are obligatory. Miyagawa (2010), on the other hand, argues for a derivational account, the PBCC, based on the idea of whether movement crosses a transfer domain or not. In this section we will focus on the PBCC and show that it cannot predict the topic fronting data in Turkish and Spanish. In addition, we suggest that it is conceptually weak.

The main trait of the PBCC, given in (20), is that the classical A/A'-distinction is reduced to grammatical effects, so no reference is made to A-positions vs. A'-positions. Reconstruction effects are accounted for in terms of whether the moving category crosses a transfer domain (i.e. VP, TP) or not. Consequently, the distinction between A-movement and A'-movement can be dispensed with.

(20) Phase-based characterization of chains
   "A full copy of a moved item must be available for interpretation if the movement crosses a transfer domain boundary." (Miyagawa 2010: 115)

The two possibilities stated in the PBCC are illustrated in (21), which are taken from (Miyagawa 2010: 115–116):

(21)a. \[X P \text{ No copy needed} \]

   \[\text{Transfer domain} \]

   b. \[X P \text{ Phase head} \]

   \[\text{Copy} \]

In (21b), the copy of XP crossing a transfer domain is obligatory because the chain created by this movement must be totally recovered when the phases are put back together at LF. In contrast, the movement in (21a) "... occurs within the same transfer domain, hence the chain as a whole is transferred intact, so there is no need for a fully specified copy to occur at the point where the movement originated, although there is nothing wrong with leaving such a copy" (Miyagawa 2010: 116). Therefore, "... any movement that does not cross a transfer domain boundary is free to not leave a copy (although it can) ..." (Miyagawa 2010: 117).

This is inconsistent with our topic fronting data in several respects. First, it cannot predict the ungrammaticality of sentences such as (7a–b), repeated in (22):

(22)a. *[A su vecino] lo vio SUSANA, \(t\).
    to self neighbour CL see-pst.3s Susana

   b. *[Kendi komšu-su-nu] İŞIK, \(t\) gör-dü.
    self neighbour-poss ACC Işık see-pst.3s

   'Her neighbour was seen by Susana/Işık.'

In the first step of the derivation of (22a–b), the fronted objects move to Spec,vP in the V phase. So they need to leave a copy in their original positions in VP, which must receive a bound interpretation according to the PBCC, contrary to facts. Therefore, to capture the ungrammaticality in such cases where the subject has an IF reading, (21b) has to be revised to the effect that the obligatory "Copy" must be replaced with "No copy needed". This would make no difference between (21a) and (21b), yielding an undesirable outcome.

The examples in (9a–b), repeated in (23), raise the same issue. To predict the grammaticality of these sentences, the obligatory “Copy” in the configuration illustrated in (21b) must be replaced with “No copy needed.”

(23)a. \[A Susana,] la vio SU vecino \(t\).
    to Susana CL see-pst.3s self neighbour-nom

   b. *[İşik-ı komšu-su-nu] KENDİ KOMŞU-SU \(t\) gör-dü.
    İşık-acc self neighbour-poss see-pst.3s

   'Susana/Işık was seen by her neighbour.'
In the framework of the PBCC, “No copy needed” means that there is an optional copy which may or may not be used for binding interpretation by the semantic component. However, to make a correct prediction of the grammaticality of the examples in (22) and (23), we need “no copy” to be left in the original positions of the fronted objects. This option, however, is not included in the PBCC.

Speaking of the conceptual weaknesses of the PBCC, it is also hard to understand what an “optional” copy exactly is. If something is optional, this means that it may or may not be omitted. In other words, its use is obligatory when needed and illicit when it is not. However, this conception does not seem to conform to the Minimalist framework. Note that to explain (14b), repeated below in (24a), the PBCC must use several optional copies (shown in angle brackets), as illustrated in (24b):

(24a) [Su chaqueta], [Ángelai] la puso en el armario AYER.

‘Angela put her jacket in the closet yesterday.’

b. [t3 <su chaqueta> <Ángelai> la puso [t3 <su chaqueta> <Ángelai> v [t3 <su chaqueta> en el armario ayer]].]

Here, except for the lowest copy of the object in VP (which is obligatory according to the PBCC), all instances of the subject and object copies are optional. This means that in the second cycle of the derivation (i.e., the CP phase) some combinations of the copies of the binder and bindee produce ungrammatical binding configurations, whereas some of them yield correct results. This would be acceptable if there were a way to discriminate between combinations producing correct and incorrect binding configurations, but according to the PBCC framework they all exist at the same time in the same derivation. Then, how can the semantic component be sure about the combinations yielding grammatical structures? Even if the semantic component could discriminate, then why couldn’t it use the same information (22a–b), repeated in (25), which are ungrammatical?

(25a) *[t3 <a su vecino> lo vio] [t3 <a su vecino> SUSANA [t3 <a su vecino>]].

b. *[t3 <Kendi kömşusunu> [t3 <kendi kömşusunu> ISIK [t3 <kendi kömşusunu> gør-dü]].]

The conclusion we draw from the preceding discussion is that, for anaphora binding, the PBCC cannot account for the topical fronting data both in Turkish and Spanish and it is both empirically and conceptually inaccurate. Crucially, all these shortcomings will be explained in our system.

4 A feature-based account of binding in topical fronting

4.1 The framework

In the relevant literature on binding it has been claimed that anaphors (as well as pronouns) undergo LF-movement to a functional head such as v0 and T0 (see Avrutin 1994, Chomsky 1995, Hestvik 1992, Lebeaux 1983, Pica 1987, Reinhart and Reuland 1991, among others). Being adjoined to a functional head, the binding domain of the anaphor/pronominal is defined by Complete Functional Complex (CFC). The definitions of CFC and the LF-adjunction process are given in (26) and (27), respectively.

(26) Complete Functional Complex (CFC)

“A CFC is a minimal category such that ‘all grammatical functions compatible with its head are realized in it’ – the complements necessarily, by the projection principle, and the subject, which is optional unless required to license a predicate (Chomsky 1986: 169).” (Hicks 2009: 31)

(27) LF-adjunction of anaphors (to v0 or to T0)

In line with some recent studies suggesting that binding conditions may be reduced to narrow syntactic operations (e.g., Epstein et al. 1998, Hicks 2009, Hornstein 2000 and 2006, Kayne 2002, Zwart 2006), and following studies such as Saito (2003) and López (2009), where anaphoric constituents are claimed to have [+anaphor] feature as their categorial features, we assume that the adjunction process takes place in narrow syntax by adjoining anaphoric features to the relevant functional heads. Once adjoined to a functional head (such as v0 and T0), anaphoric features get locally bound by potential antecedents in their binding domain, which is defined by CFC. Thus, the binding relation between an antecedent and an anaphor (binder and bindee) is just a reflex of the c-command relation between the binder and the anaphoric feature adjoined to v0 / T0. As will be seen below, this framework allows us to account for the interactions between binding, topical fronting, and IF in a natural way as well as the puzzling A- and A’-movement effects discussed in the previous sections.
4.2 Derivation of binding relations in topic fronting

Both in Spanish and Turkish IF is licensed in the vP domain (see İșsever 2006 for Turkish; Sufer 2000 and Zubizarreta 1998 for Spanish). By application of the NSR, focal stress is assigned to the most deeply embedded in situ category, which has been assigned a [+foc] feature in the Numeration (Aboh 2010). In line with Jiménez-Fernández (forthcoming) and Jiménez-Fernández and Spyropoulos (2010), we assume a strict parallelism among phase heads v0 and C0; as in the case with C0 (see (1)), discourse features and agreement features are inherited from v0 to v0. The only exception to this is the case where the external argument (subject) bears a [+foc] feature, and hence needs an IF interpretation. In that case the focus feature of v0 is retained so that the matching feature on the external argument can be checked. This explains the assignment of information focus in the vP phase.

Zubizarreta (1998) suggests that NSR requires all constituents lacking a [+foc] feature below the focus-marked one to undergo p-movement (prosodically motivated movement) to a higher position than IF (see İșsever 2006 for the application of p-movement into Turkish; see also Parafita-Couto 2009 for a view of p-movement as a post-syntactic operation). Following Holmberg (1999), displaced constituents target outer Specs of v0, where they satisfy its EPP feature (Chomsky 2001). After p-movement of the required constituents, the domain of v0 is Spelled-Out.

The cooperation between the NSR and p-movement allows for an explanation of A-movement effects in our topic fronting data schematized in (18), and repeated below in (28).

(28) A-movement effects

a. $[\alpha_0 + [+anaphor] \left[ VP \ldots \alpha_0 \ldots \right]]$

b. $^[\gamma] \alpha_0 + [+anaphor] \left[ VP \ldots \right]$

Let us first look at how the structure in (28a) is derived. The derivational steps of this structure are shown in (29).

(29) Derivation of (28a)

Step 1: $^[\gamma] \alpha_0 + [+anaphor] \left[ VP \ldots \right]$
Step 2: $[\alpha_0 + [+anaphor] \left[ VP \ldots \right]]$ (Spell-Out of VP)
Step 3: $[^\gamma T^0 + [+anaphor]] \left[ \alpha_0 + [+anaphor] \left[ VP \ldots \right] \right]$...
Step 4: $[^\gamma T^0 + [+anaphor]] \left[ \alpha_0 + [+anaphor] \left[ VP \ldots \right] \right]$...

In Step 1, the anaphor in the bindee (β), i.e., the anaphoric subject, c-commands its DP binder (α) from its merged position, yielding an ungrammatical binding configuration. In the next step, NSR requires the DP binder to undergo p-movement to outer Spec,vP because the subject has IF interpretation (i.e., [+foc] feature). Thus, when vP is Spelled-Out, the binder is in a good position to bind the anaphor in the bindee. This would explain the A-movement effects but anaphoric features of the subject need to adjoin to the next higher functional head, which is T0 (Step 3). This adjunction operation prevents the binding relation between the DP and the anaphor to be established in the vP domain. However, as the DP binder needs to check its [+top] feature against δ-features of T0, it undergoes movement to Spec,TP, entering the binding domain of the anaphor (Step 4). Hence, the c-command requirement of binding is fulfilled in the TP area.

As we have seen in (29), the derivation of the structure in (28a) produces three copies of the frontal element: the lowest copy in the Merge position in vP, the intermediate copy in Spec,vP, and the highest copy in Spec,TP. The question is whether each copy is interpreted in terms of binding relations. According to copy identification accounts like the PBCC, the lowest copy must obligatorily be available for interpretation, while the other two are optional in this respect. In fact, this means that all copies are potentially available to be interpreted in a binding relation. However, this is far from clear since, as we have discussed in section 3, if all copies could enter into binding relation freely, this would mean that ungrammatical combinations of the copies of the binder and bindee (such as the one in Step 1 in (29)) obtained in the course of the derivation would also be interpreted correctly at times, causing an unsuccessful binding relation to arise as well. However, it is not the case that there are some speakers who find the configuration in (28a) ungrammatical in terms of binding. This predicts that there is no binding ambiguity in this structure (namely, the only binding relation present in (28a) is interpreted by all speakers in the same way), which suggests that those copies leading to incorrect binding relations must not be interpreted. Note that, in terms of anaphora binding, our system predicts that copies of anaphoric constituents themselves are not relevant in binding; rather it is the anaphoric feature that counts for the binding relation which takes place in this process. This leaves open the question of whether they are actually deleted or not, a question which does not necessarily concern our analysis of anaphora binding in this study.

Turning to (28b), its derivation, shown in (30), proceeds in the same way as (28a) but the result is an ungrammatical structure.

(30) Derivation of (28b)

Step 1: $[\alpha_0 + [+anaphor] \left[ \ldots \right]]$
Step 2: $^[\gamma] \alpha_0 + [+anaphor] \left[ \ldots \right]$

In this derivation, the anaphoric feature in the bindee must adjoin to v0 since it is the
next higher functional head for the anaphor in the VP domain (Step 1). In the next step, the bindee undergoes p-movement and lands in outer Spec,vP, where it can c-command its binder, yielding an incorrect binding configuration. Again, this would explain the ungrammaticality, but recall that in our framework it is the c-command relation between the DP binder and the anaphoric features in functional heads that makes possible the binding relation between the binder and the bindee. As the DP binder (subject) in Spec,vP is now in the binding domain of the anaphor and c-commands the anaphoric features adjoined to v, the binding relation would be established as required. We suggest that it is. Then how can we explain the ungrammaticality? (As further steps of this derivation in the next phase will not change the binding relations we omit them here.)

We propose that in the derivation of (28b) the [+anaphor] feature adjoined to v creates an intervention effect. Note that in this structure the DP binder (subject) has [+foc] feature, so according to the NSR it needs to be the closest category to v because in this structure it is the head which is responsible for licensing IF. However, the categorial feature of the anaphor has already adjoined to v. Thus, from the viewpoint of the NSR, the most deeply embedded ‘category’ is the anaphor although the [+foc] feature belongs to the subject DP, which is above it. (This also implies that the NSR operates on both focus and categorial features.) This results in a PF-crash because the NSR cannot function properly. Note that, as shown in (31) below, this structure is perfectly acceptable both in Turkish (İşsever 2007, Öztürk 2005) and Spanish (Suñer 2000) when the subject has a contrastive, rather than an information focus interpretation since NSR has nothing to do with contrastive focus (see Zubizarreta 1998 for the procedural distinction in assigning information focus and contrastive focus; see also E. Kiss 1998 for the distinct properties of both types of foci). Our feature-based analysis of binding also gives support to the idea that binding relations must be reduced to narrow syntax, especially when taking into consideration the fact that NSR feeds syntax (Suñer 2000, Zubizarreta 1998, Zubizarreta and Vergnaud 2005, though see Parafita-Couto 2009 for a different view), a conclusion which is also strengthened by our findings in this study.

(31) a. [Los unos a los otros] se telefonearon LOS CHICOS, t1 (las chicas, no).
   ‘The boys telephoned each other, not the girls.’

b. [Birbir-ler-i-ni] ADAM-LAR, t1 ara-di (kadınlar değil).
   ‘The men called each other, not the women.’

As to A'-movement effects in topic fronting, schematized in (19) and repeated in (32), we have seen that the binding relation between a DP (binder) and an anaphor (bindee) can be established if the binder has no [+foc] feature (i.e., information focus). In our data, this is observed in two configurations given in (32a), and (32b–c).

(32) A'-movement effects
   a. [TP bind[+top] β bind[+top] [VP ... α ...]]
   b. [TP bind[+top] β bind[+top] [VP ... α ...]]
   c. [TP bind[+top] β bind[+top] [VP ... α ...]]

As regards (32a), we have suggested above that there is nothing wrong with the binding relation between the binder and the bindee, but the ungrammatical stem from the intervention of [+anaphor] feature adjoined to v, causing the NSR not to function properly (see (28b) and (30)). This predicts that with a DP subject without a [+foc] feature the structure would be grammatical. (32a) shows that this expectation is perfectly borne out. Hence, in this configuration, although the bindee in Spec,TP c-commands its binder, the structure is perfectly acceptable because the binding relation between them has already been established in the vP area. Recall that in our framework what is required for the binding relation to hold is the c-command relation between the DP binder and the [+anaphor] feature and not between the lexical anaphor and the DP. In this configuration this is exactly what we have: the DP subject (binder) in Spec,vP c-commands the [+anaphor] feature adjoined to v.

Having dealt with topicalization of a single item in binding configuration and the role of IF in this process, let us consider the case of multiple topic fronting. As shown in (32b–c), both orderings of the binder and bindee result in successful binding, which is surprising, considering the well accepted A-status of Spec,TP in the literature. However, the ordering possibilities between the binder and the bindee in Spec,TP receive a natural explanation in our analysis. First, let us consider a situation where the bindee is the subject and the binder is the object. As shown in (33), in the vP phase of such a structure the DP binder undergoes p-movement to the outer Spec,vP, where it can c-command the anaphor in the bindee.

(33) [TP bind[+top] β bind[+top] [vp ... a[+top] ...]]

In this step the binding configuration cannot be established because the [+anaphor] feature of the subject has to adjoin to the next higher functional head, which is T0 in this case. On the other hand, both the object and subject DPs need to move to multiple Specs of T0 since both have [+top]-features to check against the δ-feature of T. Since both in Turkish and Spanish they are allowed to move to the TP area in any order, we get either (32b) or (32c) (Jiménez-Fernández 2011). Thus, once the DP binder lands in a Spec,TP, be it either the inner or outer Spec, it enters the binding domain of the anaphor and can c-command the [+anaphor] feature previously adjoined to T0.

Now assume that the binder is the subject and the bindee is the object. This makes the reversed ordering between them in the vP-phase:

(34) [TP bind[+top] β bind[+top] [vp ... a[+top] ...]]
Note that the Merge position of the bindee, including the anaphor, is in the domain of VP. Thus, \( v^0 \) is the next higher functional head for the anaphoric feature to adjoin to. After adjunction takes place, the DP subject (bindee) c-commands the [+anaphor] feature in \( v^0 \), hence the binding configuration is successfully formed in the \( vP \) area. Further movements of both the subject and the object to Spec,TP to check their [+top] features will not change the binding relation between them already established in the \( vP \)-phase. As in the case of (33), the resulting order between them can be either (32b) or (32c), which are both correct. In a sense, as far as binding is concerned, movements of both the binder and the bindee to Spec,TP has just a PF reflex in (32). Hence, our analysis also has the advantage of capturing the insight of PF-movement analyses proposed in the literature for similar contexts.

5 Conclusion

In this work we have looked at anaphora binding contexts in two typologically different discourse-prominent languages, namely Spanish and Turkish. We have claimed that fronted topics in discourse-prominent languages are attracted by the multiple attractor T0 to check/value its \( \delta \)-features inherited from C0. This explains the A-effects detected in (multiple) topic fronting. The apparent exceptions regarding the A’-effects have been argued to be caused by different grammatical principles such as adjunction of anaphoric features to functional heads as well as the NSR, which interacts with movement. A phase-based approach to topic fronting in the framework of anaphoric feature adjunction has been shown to solve the classical paradox between A- and A’-properties. Interaction with focus assignment and the interpretive features of the moving category have been argued to play a crucial role in our proposal, thereby reducing the A/A’-distinction in topic fronting to other properties of narrow syntax.

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Zwart, J.-W. (2006), Baker’s generalization in a derivational theory of binding, [manuscript], University of Groningen.
We tested children’s comprehension of sentences with numerals in subject and object position, following Musolino (2009). Since the Serbian counting system has so-called paucals (cardinals denoting small sets from 2 to 4), unlike English, our goal was to investigate the interpretation that children assign to paucals. Sentences with two numerals are potentially at least four-ways ambiguous, giving rise to scope-dependent (distributive) and scope-independent (collective/cumulative) readings. Our experimental study showed that: (a) Serbian adults, unlike English adults and unlike Serbian and English children, rejected distributive reading; (b) Serbian children, unlike English children and unlike Serbian and English adults, rejected collective reading. There is thus variation with respect to both age and language. We account for (a) by arguing that there is an overt distributive marker in Serbian which adults require but children do not. Regarding (b), we argue that the difference between Serbian and English is due to the morphosyntactic properties of Serbian numerals, namely the opposition between paucals and collective numerals. Paucals have a singular nominal restriction and trigger plural verbal agreement, while collective numerals have a plural nominal restriction and trigger either singular or plural verbal agreement. Serbian children are sensitive to this morphosyntactic difference regarding numeral interpretations.

Keywords: paucals, collective numerals, distributivity, collectivity, language acquisition

1 Introduction

This article reports the findings of an experimental study designed to investigate the range of interpretations (in particular, scope-dependent and scope-independent interpretations) that sentences with two numerals allow in both child and adult Serbian. Our main experimental finding is that Serbian children, unlike Serbian and English adults and unlike English children, show a strong tendency to reject collective readings. We conclude that Serbian children, unlike Serbian and English adults, have a strong preference for distributive readings.

The issues of how the meaning of numerals is acquired by children and what is exactly the meaning of numerals have been of growing interest in the literature. The experimental studies bring evidence that by the age of 5 children know the meaning and the logical syntax of numerals (Barner and Bachrach 2010; Barner et al. 2012, Crain and Thornton 1998, Gelman and Gallistel 1978, Le Corre and Carey 2007, Sarnecka and Gelman 2004, Wynn 1990 and 1992, among many others). There has also been evidence that children start learning numerals one-by-one (Wynn 1990 and 1992). Children first learn the meaning of the numeral one (‘one-knowers’) by opposing with all the other numerals that they interpret as more than one. Then they acquire the precise meaning of two (‘two-knowers’) and interpret the other numerals as more than two, etc. The stage at which children make a relation between a counting list and the integers is considered to be the stage when they understand that the last counting item labels the cardinality of the counted set. In this sense, the meaning of numerals is associated with the denotation of sets. It is argued that the systems of quantification and numerals are tightly correlated in child language (Bloom and Wynn 1997, Barner et al 2009a, Barner et al 2009b). According to other accounts, children might bootstrap the meaning of numerals from the singular/plural marking in the language (Carey 2004). However, the distributive/collective distinction which is argued, by theoretical linguists, to be the core part of the meaning of numerals (and universal quantifiers), was much less experimentally investigated (Brooks and Braine 1996, Musolino 2009, Syrett and Musolino, submitted).

The question we are interested in is: what are the interpretations that children attribute to the sentences containing two numerals (in a subject and in an object position). On the hypothesis that distributive and collective interpretations are part of the meaning of numerals, the expectation is that children who acquired the meaning of numerals should not have any difficulty with the distributive/collective distinction.

The starting point of our investigation was Musolino’s (2009) article The Logical Syntax of Number Words: syntax, acquisition and processing in which he investigated the English sentences with two numerals such as those in (1):

(1) Three boys are holding two balloons.

In principle, (1) is considered to be four-ways ambiguous allowing two scope-dependent and two scope-independent readings. In Serbian, there is a closed set of numerals designating small quantities, so-called paucals – dva [two], tri [three], četiri [four]. Paucals have striking morphosyntactic properties which distinguish them from English numerals such as those in (1). While the nominal restriction of a cardinal in English shows up in plural agreement, the restriction of a paucal shows up with singular agreement, as shown in (2):

(2) Tri dečaka drže dva balona.

‘Three boys are holding two balloons.’

Given this striking morphosyntactic difference in number agreement between Ser-
bian and English, the goal of our study was to investigate the interpretation that children assign to paucals.

2 Experiment
2.1 Participants
Thirteen monolingual children (four boys and nine girls) between 3.1 and 6.7 years of age (mean age 5) were tested in the French Institute in Novi Sad, Serbia. The control experiment was run with twenty adults.

Experimental design and stimuli
The sentence in (2), just as the English sentence in (1), should, in principle, be four-ways ambiguous and thus allow two scope-dependent (distributive) readings (A–B) and two scope-independent readings (C–D):

A. Subject Wide Scope (SU)
B. Object Wide Scope (OBJ)
C. Collective (Each–All/EA)
D. Cumulative (CU)

Our aim was to determine whether the Serbian children did indeed allow (2) under these four readings (A–D). The task used was The Truth Value Judgment Task (Crain and Thornton 1998). The sentence in (2) was thus proposed under four contexts, illustrated with Pictures 1–4, corresponding to each of the readings in A–D.

For the sentence in (2), A (Picture 1) and B (Picture 2) are scope-dependent (distributive) readings derived via Quantifier Raising, while C (Picture 3) and D (picture 4) are scope-independent readings (collective and cumulative) in which the subject and the object are interpreted independently of each other.

There were also 6 conditions for the control questions. The first four controls, two true – in (3) and (4), and two false – in (5) and (6), were used to determine whether the child knows the meaning of the relevant paucal.

There were 40 items in the experiment, 24 test items, 8 control items (half of which required a ‘yes’ response and half of which required a ‘no’ response) and 8 additional control sentences for which only negative responses were possible.
(6) Čovek šeta dva psa.
   man-NOM.SG walk-3SG.PRES two-PAUC dog-GEN.SG
   ‘A man is walking two dogs.’

The last two controls were designed to balance the yes/no responses. On both conditions (Pictures 9 and 10) the control sentences in (7) and (8) contained two numerals, just as is the case with the test sentence, but were always false.

(7) Tri klovna drže dva cveta.
   three-PAUC clown-GEN.SG hold-3PL.PRES two-PAUC flower-GEN.SG
   ‘Three clowns are holding two flowers.’

(8) Tri žene šetaju dva psa.
   three-PAUC woman-GEN.SG walk-3PL.PRES two-PAUC dog-GEN.SG
   ‘Three women are walking two dogs.’

Task and procedure

We used the static version of The Truth Value Judgment Task (Crain and Thornton 1998) with both the target group of children and the control group of adults. For children, data were collected using computer assisted personal interviews. Every child sat individually with the experimenter at a child-sized table. The task was presented to the child in the form of a game. Before the experiment began, the experimenter gave clear instructions about the task.

A software especially designed for the experiment allowed to display images on the screen in a randomized order. After every picture, a sentence was read to the child who was asked to say whether the sentence described correctly the situation on the picture by giving a yes/no response. The answers were entered by the experimenter and children were prompted to give explanations for ‘no’ responses.

The experiment was preceded by a selection session. During this session, children were presented with two items randomly chosen by the computer. The goal of this session was to determine whether (a) the child understood the task (that she/he must look at the image, listen to the relevant sentence and answer if the sentence corresponds or not to the image), (b) pays attention to the task and (c) the objects on the images are familiar to her/him.

As for the control group of adults, subjects received the software and instructions by e-mail. They were invited to complete the experiment and to return the response file by e-mail.

For both groups, response time was recorded. In the adult group, this allowed to check that the experiment was completed in standard conditions. The session lasted 10 to 15 minutes.

3 Results

We first present Musolino’s (2009) results for English in Table 1, as they will serve as the basis of comparison for the Serbian results.

We note that there is a high acceptance of SU, EA and CU readings, but a very low acceptance of OBJ reading for adults. Children thus pattern like the adults for SU and EA readings, but unlike adults for CU reading, since they reject cumulative readings significantly. For the object condition, the difference between children and adult scores is not reported significant. These findings confirmed Musolino’s initial expectations according to which adults would score well on all readings except the object wide scope reading and that children would be adult-like on all readings except the cumulative reading.

We now turn to our findings for the Serbian test sentence in (2) which are given in Table 2 and Figure 1.

Table 1. Results for English

<table>
<thead>
<tr>
<th></th>
<th>Adults</th>
<th>Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>SU</td>
<td>82.8</td>
<td>78.1</td>
</tr>
<tr>
<td>OBJ</td>
<td>7.8</td>
<td>28.1</td>
</tr>
<tr>
<td>EA</td>
<td>100</td>
<td>98.4</td>
</tr>
<tr>
<td>CU</td>
<td>70.1</td>
<td>32.4</td>
</tr>
</tbody>
</table>
We performed a Long Linear Analysis on the yes/no responses with the two groups (children vs. adults) as a between factor, and the conditions (SU, EA and CU) as a within factor. The analysis revealed a significant interaction between these factors ($p<0.001$). There was no significant difference between children and adults in the object condition ($p<0.072$).

Interestingly, adults accept subject wide scope (dependent) reading in only 15% of the cases, while children do so in 80.8% of the cases. For the scope-independent readings, EA and CU, the opposite holds, i.e., these readings are rejected by children, while highly accepted by the adults. Looking at the results, we make the following generalizations concerning the child-adult variation in Serbian:

(i) The subject wide scope reading was accepted by children and rejected by adults (80.8% vs. 15% of ‘yes’ responses).

(ii) Scope-independent readings (collective and cumulative) were accepted by adults (92.5% and 82.5% of ‘yes’ responses) and rejected by children (46.2% and 30.8% of acceptance, respectively).

Let us now take stock and see what are the cross-linguistic asymmetries that arise from the interpretations of the results:

(I) On the scope-dependent SU reading, Serbian adults differ from English adults in a significant way (15% vs. 82.8% of acceptance), while Serbian children pattern like English children and adults (but unlike Serbian adults) in showing similar high acceptance rates (80.8%, 78.1%, 82.8% vs. 15% of acceptance respectively).

(II) On the scope-independent EA reading, Serbian children differ from all other tested groups (Serbian adults, English adults and English children) in showing a significantly lower acceptance score (46.2% vs. 92.5%, 100% and 98.4% of acceptance respectively).

Tables 3 and 4 summarize both the cross-linguistic and the child/adult variation.

### Table 2. Results for Serbian

<table>
<thead>
<tr>
<th>Percentage of YES responses (%)</th>
<th>Adults</th>
<th>Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>SU</td>
<td>75</td>
<td>32</td>
</tr>
<tr>
<td>OBJ</td>
<td>25</td>
<td>23.1</td>
</tr>
<tr>
<td>EA</td>
<td>42.5</td>
<td>46.2</td>
</tr>
<tr>
<td>CU</td>
<td>42.5</td>
<td>30.8</td>
</tr>
</tbody>
</table>

#### Figure 1. Results for Serbian

We performed a Long Linear Analysis on the yes/no responses with the two groups (children vs. adults) as a between factor, and the conditions (SU, EA and CU) as a within factor. The analysis revealed a significant interaction between these factors ($p<0.001$). There was no significant difference between children and adults in the object condition ($p<0.072$).³

Interestingly, adults accept subject wide scope (dependent) reading in only 15% of the cases, while children do so in 80.8% of the cases. For the scope-independent readings, EA and CU, the opposite holds, i.e., these readings are rejected by children, while highly accepted by the adults. Looking at the results, we make the following generalizations concerning the child-adult variation in Serbian:

³Recall that English children had adult-like interpretation scores for SU and EA readings, Table 1.

³We nonetheless point out that both Serbian and English children show a higher acceptance rate for the object wide scope reading than adults and in the same proportions.

---

### Table 3. Cross-linguistic variation

<table>
<thead>
<tr>
<th>Percentage of YES responses (%)</th>
<th>Serbian adults</th>
<th>English adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>SU (scope-dependent)</td>
<td>70.8</td>
<td>82.8</td>
</tr>
<tr>
<td>EA (scope-independent)</td>
<td>46.2</td>
<td>92.5</td>
</tr>
</tbody>
</table>

### Table 4. Child/adult variation

#### 4 General discussion

We now turn to the question of how to explain our generalizations concerning cross-linguistic variation (Table 3) and the children/adult variation (Table 4).

#### Distributivity marking in Serbian

Unlike English, Serbian has an overt marker of distributivity – po (Stanojević and Ašić 2006). Following Choe (1987), we will call the NP that is interpreted distributively – the sorting key, and the NP which is distributed over the sorting key – the distributed share.

In order to select an object NP as a sorting key, the operator $po$ must be attached to the subject NP. In that case, a subject NP is selected as a distributed share. This
selection gives us an object wide scope reading of the sentence (2), illustrated in (9):

(9) Po tri dečaka drže dva balona.
    po-DSt3 three-PAUC boy-GEN.SG hold-3PL.PRES two-PAUC balloon-GEN.SG
    ‘The groups of three boys are holding two balloons.’

The distributive marker po attaches to the NP that serves as the distributed share. Thus in (9), where po attaches to the subject tri dečaka (three boys), the subject is the distributed share and the object is the sorting key.

In contrast, when po attaches to an object NP, the object NP is selected as a distributed share, while the subject NP serves as a sorting key and therefore is interpreted distributively, as shown in (10).

(10) Tri dečaka drže po dva balona.
    three-PAUC boy-GEN.SG hold-3PL.PRES DST two-PAUC balloon-GEN.SG
    ‘Each of the three boys is holding two balloons.’

When the subject NP is interpreted as a sorting key, it provides a subject wide scope reading in (10).

Following Choe (1987), we assume that, when distributivity is not morphologically marked, it is optional. This is the case in English. In contrast, when distributivity is morphologically marked, it is mandatory. This is the case in Serbian. On Choe’s scopal account, for distributivity to hold, the sorting key must be semantically plural and the distributive share must be indefinite. So when the two arguments of the predicate are both semantically plural and indefinite at the same time, as is the case in our test sentences (be it in English or Serbian), they can alternatively serve as either the distributed share or the sorting key.

Recall however that Serbian adults, unlike English adults, rejected SU (15% vs. 82.8% of acceptance). The explanation for this cross-linguistic difference lies in the presence (Serbian) vs. absence (English) of an overt marker of distributivity. Serbian adults appear to require the presence of the distributive marker po in order to license a distributive reading.

The interesting finding is that Serbian children do not require an overt distributor to license a distributive reading, since they accept a subject wide scope reading without the distributor po in 80.8% of cases. It could mean that children did not yet acquire the meaning of po. Or it could be that po is not mandatory, be it in child or adult Serbian, but merely (strongly) preferred by adults. We leave this question open at this stage.

Strikingly, however, not only do children massively accept subject wide scope reading without an overt distributor, but they also significantly reject the collective (EA) reading: 46.2% of acceptance for Serbian children vs. 92.5% for Serbian adults (100% for English adults) but, most importantly, vs. 98.4% of acceptance for English children. We thus contend that, since Serbian children show a strong preference for distributive over collective readings, distributivity is the unmarked construal in child Serbian. It should be kept in mind that, although English children, unlike Serbian children, easily access the collective EA reading, we have no evidence as to which of the two readings, collective vs. distributive, English children might prefer, since both are massively accepted (98.4%, and 78.1% respectively).

Summarizing, we have defended two generalizations on the basis of our experimental findings:

A. Distributivity is licenced without an overt distributor in child Serbian (unlike adult Serbian).
B. Distributivity appears to be a default reading in child Serbian.

We now turn to the question of why the generalization in B. holds, that is, why do Serbian children prefer distributive over collective construals.

**Distributivity vs. collectivity in Serbian**

Like other Slavic languages, Serbian has several classes of numerals, which differ morphosyntactically: cardinal numerals (dvu [two], tri [three], četvr [four]), cardinal adjectives (dru [second], treć [third], četvr [fourth]), collective numerals (dvoje [two], troje [three], četvoro [four]), collective numeral substantives (dvija [two], trojca [three], četvorica [four]), collective numeral adjectives (dvoji [m./dvoj [f.]/dvoja (n.) [two], trojci (m.)/troje (f.)/troja (n.) [three], četvori (m.)/četvore (f.)/četvora (n.) [four]) (see Kim 2009). Cardinal numerals in (11) designating small quantities are known as puaux. Puaux in (11) versus collective numerals in (12) will be the focus of our discussion.

(11) Cardinal numeral, so-called paucal:
    Tri deteta drže dva balona.
    three-PAUC child-GEN.SG hold-3PL.PRES two-PAUC balloon-GEN.SG
    ‘Three children are holding two balloons.’

(12) Collective numeral:
    Troje dece drže dva balona.
    three-COLL child-GEN.PL hold-3SG/PL.PRES two-PAUC balloon-GEN.SG
    ‘Three children are (together) holding two balloons.’

This is not altogether true since Musolino suggests that there might indeed be a preference for the distributive over the collective readings in child English. Here is why: on the basis of the facts from English, he expected for adults significantly higher rates of acceptance for readings SU, EA and CU, in comparison with OBJ reading. As regards to children, and on the basis of previous studies, Musolino expected them to be adult-like. Nevertheless, on the basis of Lee’s (1996) work on Chinese, he considers the possibility of a significantly lower acceptance of CU by children than by adults. Turning to results, Musolino (2009: 36) suggests that “preschoolers tend to assign numerically quantified expressions a distributive reading”, given the higher availability of both distributive and cumulative readings for children than for adults. See also Syrett and Musolino (submitted).
As already mentioned above, and shown in (11), paucal cardinals – *dva* [two], *tri* [three] and *četiri* [four], select a singular NP as their restriction and trigger plural agreement on the verb. In contrast, so-called collective cardinals select a plural NP as their restriction but trigger either singular or plural agreement on the verb, as seen in (12).

There is a debate in the literature as to whether paucals are generated in the specifier of the NP they modify (Babby 1987) or as the head of a NumP selecting an NP as its complement (Franks 1994). For concreteness, we adopt here Franks' proposal as shown in Figure 2, since it has the advantage of explaining why the NP complement shows up with genitive case (and not with nominative/accusative case, as would be expected for a subject/object).

Moreover, the assumption that paucal cardinals are NumPs (taking a singular NP complement) can also explain why they trigger plural verbal number agreement (the agreement would be between the Num(P) and the verb).

Recall that the cardinals used in our experimental items were paucal cardinals (2). We therefore surmise that Serbian children’s strong preference for distributive readings of paucals could be due to the singular number agreement on the NP restriction (ungrammatical in English) since singular agreement is the hallmark of distributivity (quantifiers which are unambiguously distributive are always singular).

Turning to collective cardinals in (13) and (14), to understand why they trigger either singular or plural number agreement on the verb, consider the following paradigms:

(13) a. Troje dece drži dva balona.
   three-coll. child-gen.pl hold-3pl.pres two-pauc balloon-gen.sg
   ‘Groups of three children are holding two balloons.’

b. ?? Troje dece drži po dva balona.
   three-coll. child-gen.pl hold-3sg.pres dist two-pauc balloon-gen.sg
   ‘A group of three children is each holding two balloons.’

Plural verbal number agreement (13a) yields a collective interpretation of the subject NP. The NP thus denotes a plurality of sets and this is why it serves as the sorting key in (13b). The distribution is over sets, i.e., sets of two balloons are distributed over sets of three children. (14a) with singular verbal agreement also yields a collective interpretation of the subject NP, but this time the subject NP denotes a single individual, itself a set of three individuals and in this sense does not count as plural, but a singular individual. This is why it triggers singular agreement and cannot serve as a sorting key for the distributor (14b).

This suggests an alternative explanation for Serbian children’s results. Recall that Serbian children did poorly on three conditions – OBJ, EA and CU. We have implicitly assumed that CU is a collective reading and thus concluded that Serbian children do poorly on collective readings. In addition, so-called object wide scope reading could be analyzed as involving a collective interpretation of the subject NP denoting a plurality of sets of three individuals on a cumulative interpretation. We could thus paraphrase (2) as groups of three children that are all together holding two balloons:

(14a) Troje dece drži dva balona.
   three-coll. child-gen.pl hold-3sg.pres two-pauc balloon-gen.sg
   ‘A group of three children is each holding two balloons.’

Turning to collective cardinals in (13) and (14), to understand why they trigger either singular or plural number agreement on the verb, consider the following paradigms:

(14b) Troje dece drži po dva balona.
   three-coll. child-gen.pl hold-3sg.pres dist two-pauc balloon-gen.sg
   ‘A group of three children is each holding two balloons.’

The same image was used in the scope-dependent object condition (see Picture 2).
Troje dece drži dva balona.
three-coll child-gen.pl hold-3pl.pres two-pauc balloon-gen.sg
‘A group of three children is holding two balloons.’

Troje dece drže dva balona.
three-coll child-gen.pl hold-3pl.pres two-pauc balloon-gen.sg
‘Groups of three children are holding two balloons.’

Picture 12. Collective EA

Picture 13. Collective Cumulative reading

The relevant predictions are summarized in Table 5.

<table>
<thead>
<tr>
<th>Distributor</th>
<th>Numerical Type</th>
<th>Agreement on the Noun</th>
<th>Agreement on the Verb</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>(po)</td>
<td>paucal</td>
<td>singular</td>
<td>plural</td>
<td>distribution over atomic individuals (Picture 1.)</td>
</tr>
<tr>
<td></td>
<td>collective</td>
<td>plural</td>
<td>plural</td>
<td>collective-cumulative (Picture 3.)</td>
</tr>
<tr>
<td>(po)</td>
<td>collective</td>
<td>plural</td>
<td>plural</td>
<td>distribution over non-atomic individuals (Picture 2.)</td>
</tr>
<tr>
<td></td>
<td>collective</td>
<td>plural</td>
<td>singular</td>
<td>collective EA (Picture 4.)</td>
</tr>
<tr>
<td></td>
<td>collective</td>
<td>plural</td>
<td>singular</td>
<td>ungrammatical</td>
</tr>
</tbody>
</table>

Table 5. Predictions for interpretations of paucals and collective cardinals

Moreover, since Serbian children do not need an overt distributor to license distributivity, we might also expect (12a), where the subject denotes a plurality of sets, to allow a distributive reading where the distribution is over non-atomic sets, i.e., to yield the adult reading associated with the sentence in (12b) with po attached to the distributed share dva balona (two balloons):

5 Conclusion
On the basis of our experimental study, two important generalizations emerged:

1. Serbian children prefer distributive over collective construals of paucals, even in the absence of the distributive marker which is either required or preferred by adults.

2. Serbian children, unlike Serbian adults, reject collective readings of paucals.

To explain generalization 1, we argued that paucals, a closed set of cardinal numerals in Serbian which have singular nominal restriction and trigger plural verbal agreement, and which were used in our test sentences, do yield distributive readings of NPs in children. While adults require po for distributive readings, children do not.

To explain generalization 2, we suggested that collective cardinals with plural nominal restriction yield collective readings in child Serbian.

We reanalyzed OBJ reading as a collective-cumulative reading. Therefore, all three conditions in which children had low score rates, EA, OBJ and CU, were analyzed as readings where subject NP is interpreted collectively.

On this proposal, OBJ reading is no longer analyzed as a scope-dependent reading, but rather as a scope-independent reading with a subject NP denoting a plurality of sets. We thus expect that both Serbian children and adults should score well under the object condition if we use collective instead of paucal cardinals. Further research is needed to test this prediction.

Acknowledgments
I would like to thank Hamida Demirdache for her careful supervision. Thanks are also due to Leticia Pablos Robles for her participation in the statistics analysis. Oana Lungu
and Orin Percus provided insightful comments on the paper. Thanks to all the children and adults from Novi Sad, Serbia, who participated in the experiment.

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Syrett, K. and J. Musolino (submitted), Collectivity, distributivity, and the interpretation of numerical expressions in child and adult language, [manuscript], Rutgers University.
3 Two Kinds of Dislocated Topics in Macedonian

Sla vica Kochovska

The paper discusses two types of left-dislocated constructions in Macedonian each of which is characterized by having a (direct object) DP in a clause-initial position, occurring either with or without a clitic in the IP. It is shown that such clause-initial DPs can be distinguished derivationally and thus mapped onto two different constructions, identified as Clitic Left Dislocation and topicalization. In particular, it is argued that CLLDed DPs are base-generated in their surface position, while topicalized DPs are derived by movement. Building on the derivational differences, the two constructions are also shown to differ in terms of their semantic and pragmatic properties.

Keywords: clitics, left-dislocation, Clitic Left Dislocation, topicalization, Macedonian

1 Introduction

In this paper, I discuss two types of left-dislocated constructions in Macedonian, Clitic Left Dislocation (CLLD) and topicalization. The most obvious difference between the two is that in CLLD, a DP in a clause-initial position cooccurs with a clitic in the IP (see (1a)), while in topicalization, a DP in a clause-initial position occur without a clitic in the IP (see (1b)).

(1) a. Site/poveketo knigi, Ana *(gi) pročita.
    all/most books Ana them read
    ‘All the books/most books, Ana read them.’

b. Mnogo/malku knigi, Ana *(gi) pročita.
    many/few books Ana them read
    ‘Many/few books, Ana read.’

c. Dve/nekolu knigi, Ana (gi) pročita.
    two/several books Ana them read
    ‘Two/several books, Ana read (them).’

These correspond to Contrastive Topicalization constructions in Bulgarian (see Armu dova 2003) and topicalization constructions in Greek and Italian (see Alexopoulou and Folli 2010).

1 I am grateful to Veneta Dayal, Mark Baker, Roger Schwarzschild, Barbara Partee, Lanko Marulić, and Rok Zan cer for their comments and discussions. I am particularly grateful to the participants at GLiP 7 for their generous feedback. I also thank Milka Kalajdziska, Ljiljana Kočovska, Gjorgi Kočovski, Igor Kochovski, Tatjana Rantaša, and Eduard Žaucer for their comments and discussions. I am particularly grateful to the participants at GLiP 7 for their generous feedback. I also thank Milka Kalajdziska, Ljiljana Kočovska, Gjorgi Kočovski, Igor Kochovski, Tatjana Rantaša, and Eduard Žaucer for their comments and discussions.

2 The categorization of the DPs as strong/weak is also the driving factor in the licensing of the doubling clitics (for arguments, see Barwise and Cooper 1981). I assume that the characterization of the DPs as strong/weak is also the driving factor in the licensing of the doubling clitics (for arguments, see Kochovska 2010).

Building on the initial observation that the structures in (1a) and (1b) differ with respect to the presence vs. absence of a clitic, I show that they also have distinct syntactic, semantic, and pragmatic properties, and as such their mapping onto two different constructions is well motivated. The analysis will have implications for the data like (1c), where the dislocated DPs in clause-initial position seem to optionally allow for the presence of a clitic. I claim that the optionality of the clitic in such cases is only apparent and that its presence/absence in fact follows the general pattern of CLLD and topicalization as exemplified in (1a) and (1b).

The paper is organized as follows. Section 2 gives a brief outline of the distribution of clitics with direct object DPs in Macedonian. Section 3 provides arguments for the claim that CLLD and topicalization are derivationally distinct. Section 4 provides further support for the distinction by investigating the semantic and discourse properties of the two constructions. Section 4 contains the conclusion.

2 Direct objects and clitics

Direct object DPs in Macedonian can occur in three different positions in the clause. To certain extent, the distribution of the clitics seems to correlate with the positioning of the DPs.

Direct object DPs can occur in the argument position of the verb, as shown in (2a–b). In such cases, strong DPs obligatorily require a clitic (see (2a)), while weak DPs disallow it (see (2b)).

(2) a. Ana *(ja/zi) pročita seksoja kniga/poveketo knigi.
    Ana it/them read every book/most books
    ‘Ana read every book/ all the books/most books.’

b. Ana *(zi/pročita mnogo/dve knigi.
    Ana them read many/two books
    ‘Ana read many/two books.’

Direct object DPs can also occur in a preverbal position, as shown in (3a–b). The distribution of the clitics in this case parallels that of the postverbal DPs, in that strong DPs obligatorily require one (see (3a)) and weak DPs disallow them (see (3b)).

(3) a. Ana seksoja kniga/poveketo knigi *(ja/zi) pročita
    Ana every book/most books it/them read
    ‘Ana read every book/most books.’

b. Ana *(ja/zi) pročita seksoja kniga/poveketo knigi.
    Ana it/them read every book/most books
    ‘Ana read every book/ all the books/most books.’
b. Ana mnogu/dve knigi (*gi) pročita.
Ana many/two books them read
'Ana read many/two books.'

Finally, direct object DPs can be found in a clause-initial position, as in (4a–c). The clause-initial position is characterized by a marked pause after the object, indicated here as comma intonation. The distribution of the clitics with dislocated DPs is more nuanced. While strong DPs continue to require clitics (see (4a)) and weak DPs continue to occur without them (see (4b)), a subset of weak DPs can now appear with clitics (see (4c)).

(4) a. Sekoja kniga/poveketo knigi, Ana *(ja/gi) pročita.
every book/most books Ana it/them read
'Every book/most books, Ana read it/them.'
b. Mnogu knigi, Ana *(gi) pročita.
many books Ana them read
'Many books, Ana read.'
c. Dve knigi, Ana (gi) pročita.
two books Ana them read
'Two books, Ana read (them).'

The paper offers a more detailed investigation of the properties of the structures exemplified in (4a–c). My main goal here is to show that CLLD and topicalization are two distinct constructions in Macedonian based on their different syntactic, semantic and pragmatic properties. In this context, I argue that CLLD and topicalization are derived differently, through base-generation and movement, respectively. I also show that both CLLDed and topicalized DPs in Macedonian are interpreted in their surface position in the left periphery. The remainder of the paper offers evidence for these claims.

3 Syntactic differences between CLLD and topicalization

This section discusses the behavior of CLLDed and topicalized DPs with respect to WCO and island effects and in doing so outlines two arguments for the claim that CLLD involves base-generation of an argument at the left periphery with a coindexed pro inside IP, while topicalization is derived through movement of a direct object from IP to the left periphery.

3.1 Weak crossover effects

WCO violations arise in configurations where an operator binds a pronoun and a variable, neither of which c-commands the other. The effects are shown in (5a–b) for English and (6a–b) for Macedonian. Both cases are ruled out as WCO violations because the variable \( t \) is coindexed with a pronoun \( m_{u} \) [his] to its left.

(5) a. *His mother loves everyone,.
b. [everyone] [his mother] loves \( t \)

(6) a. *[Majka m_{u}] g_{o} saka [sekoj dete].
mother his him loves every child
'His mother loves every child.'
b. [sekoj dete], [majka m_{u}] t_{i} g_{o} saka t_{j}

As has been noted by many (see Iatridou 1995; Cinque 1990; Rizzi 1997; Arnaudova 2003; Alexiadou 2006; etc.), CLLD does not give rise to WCO effects but topicalization does. In this respect, Macedonian is no exception, as can be seen from the data in (7)–(10).

Dislocated strong DPs as well as dislocated weak DPs coindexed with a clitic do not give rise to WCO effects; see (7) and (8), respectively.

(7) a. *[Sekoja detei], [majka m_{u}] g_{o} saka.
every child  mother his him loves
'Every child, his mother loves him.'
b. [sekoj dete] [majka m_{u}] saka ti

(8) a. *[Dve decai], [majka im i] gi i saka.
two children mother theirs them loves
'Two children, their mother loves them.'
b. [dve deca] [majka im] saka ti

The lack of WCO effects in both (7a) and (8a) can be attributed to the fact that the variable bound by the DP in clause-initial position is coindexed with a pronoun to its left.

I assume that the trace in such cases is that of pro (see Kochovska 2010).

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6 The constructions in (2a–b) and (3a–b) are instantiations of Clitic Doubling (CD). I take the difference between the pre- and postverbal position to be that of contrastive vs. information focus, respectively (É. Kiss 1998, see Kochovska 2010).
Thus, WCO tests show that CLLD is derivationally distinct from topicalization in that CLLDed DPs originate in their clause-initial position, but topicalized DPs move to the left periphery. This shows most clearly with the weak DPs like the numerals, where both options are available (see (8a) and (10a)). It is also supported by strong DPs, which do not show WCO violations when left-dislocated, showing that the possibility of base-generation is available to them.\footnote{Note that we have no evidence whether a movement option is or is not available to strong DPs. In the absence of such evidence, I have assumed that it is.}

3.2 Island effects

Another well-known fact that distinguishes CLLD from topicalization is their different island sensitivity (see Cinque 1990; Arnaudova 2002, 2003; etc.). In particular, studies have shown that CLLD freely violates weak wh-type islands, while topicalization does not. The same effects are also found in Macedonian, as illustrated in (11a) and (11d), respectively.

(11)  a. *Sekoj student, se prašuvam kako kje go najdeš. every students refl wonder-I how will him find

b. *Dve knigi, se prašuvam kako kje gi najdeš. two books refl wonder-I how will them find

c. ??/*Dve knigi, se prašuvam kako kje najdeš. two books refl wonder-I how will find

d. *Mnogu knigi, se prašuvam kako kje najdeš. many books refl wonder-I how will find

The ungrammaticality of (11c–d) can be explained if we assume that topicalized phrases in Macedonian can only connect to the trace in object position via a chain of antecedent government.\footnote{The underlying assumption being that CLLD involves a binding chain while topicalization involves a government chain (following Cinque 1990). That the trace in such cases is a variable was proved by the presence of WCO effects in such constructions; see (10a).} Since the dislocation of the universal in (11a) does not result in a weak island violation, we can conclude that the relation between the clause-initial DP and the trace in object position are part of an antecedent government chain.

Both CLLDed and topicalized DPs, however, obey strong islands, such as those created by adjunct clauses, as in (12a–b), or relative clauses, as in (13a–b).\footnote{The examples in (12a-b) and (13a-b) are adopted from Baker (1996: 104).}

(12)  a. *Site/dve mački, plačev zatoa što Petar gi istepa. all/two cats cried-I because that Petar them beat

b. *Mnogu/dve mački, plačev zatoa što Petar istepa. Many/two cats cried-I because that Petar beat

(13)  a. *Site/dve košnici, go poznavam čovekot što gi isplete. all/two baskets him know-I man-the that them wove

b. *Mnogu/dve košnici, go poznavam čovekot što isplete. many/two baskets him know-I man-the that wove

The ungrammaticality of (12a–b) is due to the fact that the dislocated DPs cannot enter into a chain with a pronoun inside an adjunct modifier clause which is a strong island. The same effects are present in relative clauses in (13a–b), where the binding relation between the dislocated phrase and the pronoun inside the relative clause is disrupted.

To summarize, the behavior of clause-initial DPs with respect to syntactic islands shows that topicalization is derived by movement of a DP from an IP internal position to the left periphery, while CLLD is derived through base-generation of the DP at the left periphery.

4 Semantic and pragmatic properties of CLLD and topicalization

In section 3 we saw evidence that the two constructions in which clause-initial direct objects participate differ with respect to their syntactic derivation. In this section, I present evidence from their semantic and pragmatic behavior that further supports the claim that CLLD and TOP are two distinct constructions in Macedonian. The discussion begins with a brief overview of the discourse status of the two left-dislocated constructions.

4.1 Discourse contexts for CLLD and topicalization

It is commonly assumed that clause-initial elements in both CLLD and topicalization mark topics (Reinhart 1981, Rizzi 1997, Anagnostopoulou 1997, Kalluli 1999 and 2008, Ward and Birner 2004, etc.). This also holds for Macedonian.

To begin with, both types are excluded as answers specifying the content of a wh-question like (14). In addition, both constructions are ruled out in out-of-the-blue contexts, such as (15).

(14) a. What did Ana read?

To begin with, both types are excluded as answers specifying the content of a wh-question like (14). In addition, both constructions are ruled out in out-of-the-blue contexts, such as (15).
b. *Dve knigi, Ana pročita.
   two books Ana read
   ‘Two books, Ana read.’

c. *Dve knigi, Ana gi pročita.
   two books Ana them read
   ‘Two books, Ana read them.’

(15)a. What happened at the games today?
   b. *Dve nagradi, Tina Maze osvoi.
      two prizes Tina Maze won
      ‘Two prizes, Tina Maze won.’
   c. *Dve nagradi, Tina Maze gi osvoi.
      two prizes Tina Maze them won
      ‘Two prizes, Tina Maze won them.’

There is also a requirement that dislocated elements in both CLLD and topicalization have to be given in the previous context, as is shown in (16).

(16)a. Koj gi pročita knigite?
   who them read books-the
   ‘Who read the books?’
   b. Dve knigi, Ana pročita; tri knigi, Petar pročita.
      two books Ana read; three books Petar read
      ‘Two books, Ana read; three books, Petar read.’
   c. Dve knigi, Ana gi pročita; tri knigi, Petar gi pročita.
      two books Ana them read; three books Petar them read
      ‘Two books, Ana read them; three books, Petar read them.’

Although (16a) favors an individual answer where the answer specifies one or more individuals who read the books in question (e.g., Petar read them or Petar and Ana read them), it is also possible to answer the question with a topicalized or CLLDed construction as in (16b–c), respectively. Similarly, (17a) can be answered as in (17b) or (17c).

(17)a. Što napravi so igrackite?
    what did with toys-the
    ‘What did you do with the toys?’
   b. Dve igracki, i gi dadov na Ana. Dve igracki, i gi dadov na Tea.
      two toys her-dat gave to Ana two toys her-dat gave to Tea
      ‘Two toys, I gave to Ana. Two toys, I gave to Tea.’
   c. *Dve igracki, i gi dadov na Ana (, topkata i kuklata). Dve igracki, i gi dadov na Tea (, mečeto i žirafata) toys her-dat them gave to Tea (, the ball and the doll).
      ‘Two toys, I gave them to Ana (, the ball and the doll). Two toys, I gave them to Tea (, the teddy bear and the giraffe).’

The use of CLLD constructions in (16)–(17) is also acceptable since the dislocated element in each case is drawing from the set of toys, which has been already introduced in the discourse. The statements in (16) and (17) are also interesting in that they show that the dislocated elements in both CLLD and topicalization have to be given in the previous context. Moreover, they can introduce a further partitioning of the set introduced by the NPs in the question.13

Given that both CLLD and topicalization are similar to the extent that they unambiguously mark their clause-initial elements as topics, I now turn to their interpretation and show that in this respect the two constructions display different patterning.

4.2 Scope properties of CLLD and topicalization

It is a well-known fact that universals and bare numeral quantifiers in object positions in English can either have a narrow or wide scope interpretation with respect to a subject quantifier, as illustrated in (18).

(18)a. Two students read every book.
   b. [two students, [every book, [t1, read t1]]] There are two students, namely John and Mary, such that they read every book.
   c. [every book, [two students, [t1, read t1]]] For every book, namely a, b, and c, there are two students such that they read that book. [The set of two students may be different for every book.]

The same effects are found in Macedonian. Object quantifiers in post- and preverbal position can either have wide or narrow scope with respect to a subject quantifier; see (19a–b) and (20a–b).

(19)a. Dvajca studenti *([ja] pročita sekja kniqa. [S>O; O>S] two students it read every book
   ‘Two students read every book.’

1I am grateful to Veneeta Dayal for drawing my attention to this particular property of CLLD and topicalization. Such a use of the topic comes close to what Büring (1999) identifies as partial topics, as they in some sense “narrow down” the topic set up in the discourse.

12Cruschina (2010: 55), for example, notes that CLLD in Italian can mark either Aboutness or Familiarity Topics, the former being understood as “what the sentence is about” (following Reinhart 1981), the latter as being used to “refer to a familiar entity” (following Frascarelli and Hinterhölzl 2007).
Note that the scope properties of topicalized DPs in Macedonian are different from those of Bulgarian topicalized DPs in that the latter are ambiguous between a narrow and wide reading (Arnaudova 2003). In contrast, CLLDed DPs in both languages only take wide scope within the clause (Arnaudova 2003; Kochovska 2010). a mystery then why reconstructed topicalized DPs should not display the same possibilities.13 In view of these considerations, we must look for an alternative explanation for the difference between CLLD and topicalization.

4.3 Available readings of CLLD and topicalization

It is an interesting fact that CLLDed and topicalized DPs in Macedonian correlate with different readings. Consider the following scenario.

Scenario 1: The students in the English literature class were given a list of books to read over the holidays. At the beginning of the semester, the professor asks them who read what from the list of books and then tells her colleague about the results of the survey. It turns out that Ana and Elena have read books a and b, Tanja and Petar have read books c, d, and e, and Eli and Lidija have read books f and g. The professor’s report in this case may be as in (22):

(22a) Dve knigi, Ana i Elena gi pročitaa.
    two books Ana and Elena them read
 'Two books, Ana and Elena read them.'
 b. Tri knigi, Tanja i Petar gi pročitaa.
    three books Tanja and Petar them read
 'Three books, Tanja and Petar read them.'
 c. Dve knigi, Eli i Lidija gi pročitaa.
    two books Eli and Lidija them read
 'Two books, Eli and Lidija read them.'

The statements in (22a–c) are all appropriate in the scenario given above. The use of the CLLD constructions in such case indicates that the professor knows who read what, without disclosing the identity of the books that each of the students read. (Note, though, that the professor could have opted to disclose the identity of the books as well.)

Consider now the statements in (23a–c) which contain topicalized DPs.

(23a) Dve knigi, Ana i Elena pročitaa.
    two books Ana and Elena read
 'Two books, Ana and Elena read.'
 b. Dve knigi, sekoi student gi pročitaa.
    two books every student them read
 'Two books, every student read them.'
 c. Dve knigi, sekoi student pročitaa.
    two books every student read
 'Two books, every student read.'

In addition, obligatory reconstruction would be problematic for left-dislocated universals (or strong DPs in general). In section 2, the lack of WCO effects with left-dislocated strong DPs suggested that the DPs are base-generated in their surface position. Note, however, that there is nothing in the analysis that would rule out movement of such DPs. If movement feeds reconstruction, then we would allow for two readings of the CLLDed universal in (21a). In other words, once the universal moves to its clause-initial position, it would be able to reconstruct to its argument position, and get a narrow scope reading. This, however, does not hold in (21a).
Given that the goal of the report (and the initial survey) is to know which books were read (and by whom), a report that consists of statements with topicalized DPs would not be appropriate. The use of topicalized DPs in this context seems odd or infelicitous, because they seem to convey information about the number of books that each student read.15

The examples in (22)–(23) are informative in at least two respects. First, they clearly show that CLLD and topicalization correspond to different readings of the dislocated numerals (to be made explicit very shortly). Second, they show that CLLD and topicalization result in different pairings: CLLD seems to favor the pairing of books with the students who read those books, while topicalization seems to bring about a pairing between the students and the number of books that each of them read. The latter distinction is evident in the following situation, as well.

**Scenario 2:** The top three students in the class, Ana, Petar, and Elena, were asked to solve a number of math problems. By the end of class, Ana had solved three (problems no. 1, 2, and 3), while Petar and Elena had solved two (problems no. 2 and 3). In this context, (24a) comes out true, while (24b) is false.

(24a) Dve zadači, site studenti gi rešija.
'two problems all students them solved'

(24b) Dve zadači, site studenti rešija.
'two problems all students solved'

The CLLDed numeral in (24a) picks out the two problems such that every student solved. In this case, the numeral refers to problems no. 2 and 3. The numeral in (24b), on the other hand, seems to pick out, incorrectly, the number of problems such that every student solved.

Different judgments for (24a–b) are also obtained if the scenario is modified as below.

**Scenario 3:** Imagine that each of our three students solved two different problems: Ana solved problems no. 1 and 2, Petar solved problems no. 2 and 3, and Elena solved problems no. 1 and 3.

In this case (24b), with a topicalized DP, would come out true, because each of the students has indeed solved two problems. At the same time, (24a), which has a CLLDed DP, would come out false, because none of the students have solved the same two problems. This again confirms that CLLDed and topicalized elements have different interpretations.

Keeping this in mind, let us now look at our original examples of CLLDed and topicalized DPs in (22) and (23), respectively. The explanation for the different readings in (22)–(23) draws on the well-known distinction between referential and cardinal readings of weak DPs (Milsark 1977, Heycock 1995, etc.). To illustrate the basic distinction between the two readings consider (25).

(25) Pero vraboti dvajca studenti.
'Pero hired two students.'

The sentence is a possible answer to either a question like (26a) or a question like (26b).

(26a) Kolku studenti vraboti Pero?
'How many students hired Pero'

(26b) Kogo vraboti Pero?
'Who did Pero hire?'

Under the referential reading, the answer in (25) signifies knowledge of a number with a commitment to identity (on the part of the speaker). Under the nonreferential (i.e., cardinal) reading, the answer in (25) signifies knowledge of a number without a commitment to identity.

Although in (25) both a referential and a cardinal interpretation is possible, there are other cases where one type of interpretation is favored. For example, we can take Seven people can fit into this car to be the most likely answer to a question like How many people can fit into this car?, as it specifies an amount. Along the same lines, we can take I read War and Peace to be the most likely answer to a question like What did you read?, as it gives a specification of individuals.

Interestingly, similar preferences are found in the use of CLLD and topicalization. In particular, CLLD seems to force a referential reading of the initial element, while topicalization seems to correlate with a cardinal reading.

That CLLD is only possible with a referential reading is confirmed in contexts that force a cardinal reading. We expect that in such contexts topicalization can be used (because it allows for a cardinal reading), but CLLD cannot (because it forces a referential reading). The prediction holds, as shown in (27a–b) below.
have a referential reading, possibly due to the presence of CLLD, which is strictly referential.

- topicalized numerals as having a cardinal interpretation, we can also explain the data in the case of CLLDed DPs (cf. (21a–b), (22a–c) and (27b)). Given that we have identified expressions inside IP is an adjunction to IP, it is predicted that clause-initial direct ob-

expressions at the left periphery are interpreted in that position. Assuming that QR of

differentiation were considered, WCO and island effects, both of which showed that CLLDed

tions: CLLD, in which a left-dislocated DP co-occurs with a clitic in the IP, and topicalization, in which a left-dislocated DP does not co-occur with a clitic in the IP.

The two constructions were showed to be derivationally distinct. Two types of evidence were considered, WCO and island effects, both of which showed that CLLDed DPs are base-generated in their surface position, while topicalized DPs move from within IP to the left periphery.

The two constructions were shown to differ in terms of their semantic and pragmatic properties. Specifically, it was shown that CLLD constructions seem to force a referential reading of the dislocated DP, to the exclusion of a cardinal reading, while topicalization constructions seem to correlate with a cardinal reading of the dislocated DP. These differences, in turn, helped us explain the scope behavior of CLLDed and topicalized DPs in Macedonian. The fact that CLLDed objects take wide scope in the clause was explained to arise from their being interpreted in the position in which they are generated. The seemingly narrow scope of topicalized elements was shown to be a result of their wide scope cardinal interpretation, making their analysis consistent with the view that dislocated elements are interpreted in the left periphery.

Finally, given the overall patterning of left-dislocated weak DPs, we can conclude that the optionality of clitics with such DPs is only apparent and that its presence/ab-

ence in fact correlates with the properties of CLLD and topicalization, respectively.

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4 Licensing Polish Higher Numerals: An Account of the Accusative Hypothesis

KATARZYNA MIECHOWICZ-MATHIASSEN

This paper addresses the issue of the Accusative Hypothesis, which is a descriptive fact about Polish numeral expressions with higher numerals according to which they are intrinsically accusative. The hypothesis has been a debatable issue for almost the past two centuries, and remains so till today. I will argue in its favour and attempt to provide an answer as to the source of the accusative case borne by the numerals.

Keywords: numerals, Accusative Hypothesis, case syncretism, numeralisation

1 Introduction

The proposal to be presented provides a syntactic analysis of Polish cardinal numerals ≥5 with reference to their history and development. In particular, it provides an account of the so-called Accusative Hypothesis, according to which numeral expressions with ≥5 are intrinsically accusative1 (Małecki 1863, Krasnowolski 1897, Szober 1928, Przepiórkowski 1996 and 2004, Franks 2002). Despite it being a contentious issue2, the Accusative Hypothesis has been used by some as an explanation to the puzzling syntax of these numeral expressions (Franks 2002, Przepiórkowski 1996 and 2004, Rutkowski 2007). These proposals notwithstanding, none of them goes beyond the mere statement of the hypothesis or answers the question pertinent to the source of ACC and thus the main goal of this paper is to provide such an answer. The analysis is based on Pesetsky and Torrego’s (2004) proposal, according to which all structural case is a result of tense checking. It will be argued that there is a special tense head introducing numeral expressions with ≥5, a (null) light p, whose selective properties are sensitive to the presence of a lexicalised Num3 – the head which, it will be argued, these numerals lexicalise. The organization of the paper is as follows: in section 2, I present some historical background concerning the development of numerals; in section 3, I give an overview of their present day syntax, discuss their categorial status and propose an account of numeralisation; section 4 presents an account of the Accusative Hypothesis, and the final section 5 concludes the paper.

2 Some historical background

I concentrate here on the higher numerals ≥5, which constitute a larger group and are opposed to the lower (paucal) numerals 1–4. Although both groups of numerals have undergone significant changes, also with mutual interference, I devote most of my attention to the higher ones, as these have undergone an additional categorial change (noun—numeral) and are the ones which the Accusative Hypothesis concerns. Numerals 5–10 used to be i-stem nouns in Proto-Slavonic and later also Old Polish (Loi 1922: 127, Grappin 1950: 26–27, Comrie 1992: 747, Siuciak 2008: 18). As such, they possessed intrinsic p-features (agreement features), i.e., gender, number, and case; they triggered concord on their modifiers, and required their nominal complements to stand in GEN.PL (it also concerned combinations with bases: 10, 100, etc., Greenberg 1978). Numerals 5–9 (nowadays: pięć [five], sześć [six], siódem [seven], osiem [eight], and dziewięć [nine]) were all F.SG nouns4, dziewięć [ten] appeared to have both F and M versions (Comrie 1992: 748, Siuciak 2008: 18); sto [hundred] belonged to o-stems and was unquestionably N, and tysiąc [thousand] milion [million] were (and remain) M consonantal-stem nouns. All the bases initially also had PL forms which still exist within the fossilised forms of complex numerals: pięćset ‘five hundred’, sześćset ‘six hundred’, etc., expose the old PL of sto (set being GEN. PL), in isolation sto no longer boasts a number distinction having exclusively SG forms5 tysiąc ‘thousand’ and milion [million], however, retain their number distinctions to this day.

All the higher numerals also infiltrated for case in accordance with their respective declensions. Crucially, however, to the forthcoming discussion, under the influence of the semantically close nouns denoting vague amounts (hence vague numerals) such as: mało [little], dużo [a lot], wiele [many], trocha [a bit] (†), etc., numerals ≥5 began to take on the so-called accusative of measurement (Szober 1928: 101–102) typical of these nouns, and in fact, their present day form is a fossilised ACC.6 Apart from their own case, ≥5 also marked lexical GEN on their nominal complements. This GEN has changed from lexical to structural and has only been retained by tysiąc [thousand], milion [million], miliard [billion].

Table 1. Lexical GEN checked by tysiąc vs. structural GEN checked by sześć

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<th>CASE</th>
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1Throughout the paper I will use the following abbreviations: (i) gender: Masculine, Feminine, N (neuter), V (virile); (ii) case: NOM(inative), ACC(cusative), GEN(itive), DAT(ative), INSTrumental, LOC(ative), VOC(ative); (iii) number: SG (singular), DU (dual), PL (plural).
2See Grappin (1942), Schabowska (1967), Doroszewski (1952), and Klemensiewicz (1952) for different views, and Schenker (1971) for an overview of these various proposals.
3This cannot be seen with the originally neuter nouns mało [little]/dużo [a lot], whose NOM and ACC forms were syncretic, but is perfectly epitomized by the ACC trocha [a bit], which outlived its no longer existing NOM trocha.
4As opposed to lexical case, structural case is overruled by oblique cases, i.e. in oblique case-contexts beyond GEN both the numeral and its complement show congruence.

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Decades and hundreds exhibited properties that followed from their source simple numerals as well as combinations with them, i.e., 20–40/200–400 showed internal syntax based on agreement (just like 2–4 combined with nouns), but their external syntax reflects the properties of the simple numerals they combine with (i.e., 22 or 202 will behave like 2, and 25 or 205 like 5). We can still witness DU forms retained in (fused) complex numerals with dwu [two]: dwun- -dziestu ACC GEN zlobiersztygen [twenty], dwustu ACC GEN zlobiersztygen [two hundred soldiers], where -u is the original DU ending. Technically, the matters are very much unchanged here, i.e., 2–4 remain adjectival agreeing modifiers. Combinations of 5–9 with tens and hundreds, i.e., 50–90 and 500–900, again parallel the behaviour of 5–9 with nominal complements, i.e., tens and hundreds were GEN.PL (see piecset above), and apart from several modifications, their syntax remains largely the same. The formation of teens made use of a preposition na [on], which governed LOC (a superessive link, Greenberg 1978: 276):

1. jedn. na desęte/dwa na desęte/pgd. na desęte one on ten-loctwo on ten-loctfive on ten-loct
   *eleven/twelve/fifteen*

   An important change that affected all numerals (though the higher ones in a particular way) was the developing category of masculine personal gender, hence virile (V), as opposed to the rest: non-virile (NV). Its exponent introduced the title of ACC=GEN syncretism, which meant that ACC forms of virile nouns, pronouns and numerals modifying virile nouns were substituted with GEN ones. The syncretism started in SG, and via DU infiltrated PL, first affecting pronouns, then showing up with nouns accompanied by pronouns or numerals, to later include adjectives, modifiers and eventually nouns on their own (i.e., without the accompanying pronouns or numerals, Łoś 1928: 111–112, Janda 1999: 216–217).

2. 13th c. Mial dwu-ACC.DU młoda-ACC.DU syny/brata-ACC.DU.
   14th c. Mial dwu-ACC GEN.DU młodoj-ACC GEN.DU syny/bratu-ACC GEN.DU.
   15th c. Mial dwu-ACC GEN.DU młodych-ACC GEN.PL synu/braczi-ACC GEN.PL.
   16th c. Mial dwu-ACC GEN(M)PL młodych-ACC GEN.PL synów/braci ACC GEN.PL.

   ‘He had two young sons/brothers.’ (Janda 1999: 216–217)

   Nowadays, the V/NV agreement with the characteristic ACC=GEN syncrism is still very much alive in PL, but in SG the syncretism quite early started spreading to other whole (semi-)nominally related classes of nouns: names of games, dances, planets, toys, decorations, cigarettes, cars etc., (Kucza 1978: 93–107), and thus cannot be treated as an exclusive V/NV characteristic; crucially for us, contexts with numerals ≥5 are exclusively PL, and thus the ACC=GEN syncrism can be relied on for the V/NV distinction.

   Sentential agreement triggered by subjects 1–4 depended completely on the counted noun in both Proto-Slavonic and Old Polish, showing again their adjectivity. Subjects headed by ≥5 initially admitted both SG and PL verbs, i.e., either congruentia ad formam (formal agreement) due to the numeral being SG, or congruentia ad sensum (semantic agreement) due to the PL meaning of the whole phrase (Szober 1928: 97); gender agreement was triggered by the (nominal) numerals and not the counted nouns (see above):

   (3) pięć lat minęła (1447; Słownik staropolski)
   five-f.SG years-NV/PL GEN passed-F.SG
   ‘five years have passed’

   This state of the matters soon began to change and the paradigm was taken over by the default 3.SG.N agreement, common today. Consider the following verses from Biblia królowej Zofii (Queen Sophie’s Bible) (1455):

   (4) a. a sto waszych dziesięć tysiąców padną nieprzyjacielsze (BZ, verse 8, p. 202) and hundred your ten thousands all-PL foes ‘and a hundred thousand of your foes will fall.’
   b. Wszyscy, którzyż są zliczeni (...) było jest jich pięćdziesiąt a sto all who are counted was-3.SG.N is-3.SG them fifty and hundred tysiącow a siedem tysięcy a sześćset (...) (BZ, verse 31, p. 212)
   thousands and seven thousands and six-hundred ‘Of all who are counted (...) there were 157,600 of them.’

In (4a) we have plural (semantic) agreement, where we would expect SG.N to agree with sto, and in (4b) we have 3.SG.N agreement.

Summarising so far: the diachronic changes have left the adjectival syntax of 1–4 largely unchanged; however, the nominal numerals ≥5 have taken on ACC forms (accusative of measurement) in analogy to N nouns denoting amounts, with the spreading category of virility, the ACC forms were syncretic with either GEN (V) or NOM (NV). These changes coincided with the cardinals’ ≥5 loss of their own φ-features. We thus observe structural ACC on 1–4.

Siciak (2008: 176–179) reports that on the verge of 15th–16th c. the agreeing forms are extremely rare in texts, and the variation concerns number rather than gender (the choice is between N.SG and N.PL). It is during 16th c. that the two forms are competing, when 3.SG.N nears the norm around 1660–1700 (73%) and achieves it by 190th c.

The verses are from a transcription made by scholars from Pracowania Języka Staropolskiego UP PAN; the whole text is available at the public address:

Szober (1928) sees in that analogy the source of the 3.SG.N agreement, but it will be shown in section 3 that this cannot be so.

The changes were taking place over four centuries (16th–19th), beginning with 5–9, 10, 100, eventually affecting

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They inherited this status from Proto-Slavonic and though their syntax was then and is this day primarily adjectival, their Proto-Slavonic declension varied between pronominal (jedn. [one] and dwu [two], parallel to the demonstrative n. in SG and DU respectively), and nominal (tysiąc [three] and setrzwczter [four]) (Comrie 1992:805, Siciak 2008: 17). This state is retained in Old Polish (Łoś 1927: 146–148) and reflected in the declension of jeden [one] (like ten [this]) and dwa [two] (Łoś 1922: 125); trzy [three] and czerwcy [four] started off as nouns, the former as an i-stem and the latter as a consonantal stem noun. Their varying history notwithstanding, 2–4 ended up as adjectives whose present form is a result of influences from both pronominal and long adjectival declensions.

The development of teens proceeded as follows: jedn. na desęte > jeden na desęte > jeden nadziście > jedenaścia > jedenaścia = [eleven] (based on Comrie 1992: 766).
numerals ≥5 in structural case-contexts; they agree with the counted noun in gender (V/NV) and at the same time continue to mark it GEN (structural) and PL. The questions that arise now are: why the GEN changed its status, how to account for the mixed dependency relation between the numeral and its complement, and where the ACC comes from.

3 The present day syntax of numerals ≥5

3.1 What are numerals?

Answering this one question will actually give us answers to the first two questions above. By losing their intrinsic gender and number features, numerals ≥5 have lost an important part of their nounhood. They remain declinable, as they show case and gender inflection. Importantly, however, the gender is that of the counted noun, and the case paradigm of the numerals ≥5 is specific to them only. This last property has been taken by historians to be a sign of the emergence of a new category: numeral. The numerals have also retained their ability to mark case and number on their complements.

Figure 1. Mutual interaction between numerals and their nominal complements

As already mentioned, the checked case is now structural, and structural case is characteristic of functional heads rather than lexical ones. Let us suppose that numerals ≥5 have changed their lexical status and have become functional heads. Because they co-occur with nouns, we can assume further that they would be part of the extended projection of the counted noun (Grimshaw 1990); this could definitely explain the mixed dependency relations shown in Fig. 1, i.e., their partly nominal behaviour would be thus expected, rather than surprising. Moreover, it would explain why they have lost their intrinsic agreement features: as functional heads, similarly to such heads as v0 or T0, they can only take agreement on, rather than trigger it, also their ability to check structural case goes through without stipulation.

The question now is: what functional head would numerals lexicalise? I propose here, following many others, that the head in question is Num0 of Num(ber)P. The reasons are as follows: (i) there is a close connection to the category of number, and (ii) in view of analyses proposing gender to be parasitic on number (Ritter 1993, De Vicenzi 1999, Alexiadou et al. 2007), it would give us an answer as to why these numerals were (alongside pronouns and lower numerals) the category of choice to exhibit the newly introduced gender distinctions in PL. I further propose that in this process of numeralisation, the once nominal nouns instead of merging in their NP (N0), merge in the counted noun’s Num0, which explains both why they have lost their own ϕ-features and why they exhibit the gender properties of the counted noun.15

I propose then that we have three types of Num0 heads with the following feature content:

(5) Number head types

a. Num0 [+Q] [+plural] – numerals ≥5 numeral
b. Num0 [+Q] [+paucal/plural] – numerals 2–4 expressions
c. Num0 [+ plural] – unquantified noun phrases (also with 1)

I further propose that in this process of numeralisation, the once nominal nouns instead of merging in their NP (N0), merge in the counted noun’s Num0, which explains both why they have lost their own ϕ-features and why they exhibit the gender properties of the counted noun.16

(6) a. DP1: Num0 [number] [gender] N0 [v.acc] five
b. DP2: Num0 [number] [gender] NP1 [kobiet] women

That numerals ≥5 cannot be nominal16 is shown by Rutkowski (2007: 216–220), who points out that, first, they have nominal counterparts in the form of piątka [a five], sześćka [a six], setka [a hundred], which would be highly redundant. These two lexical types (pięć vs. piątka) have a very different syntax. Piątka and the like have PL forms, check lexical GEN, have diminutive forms, can be counted nouns of numerals, trigger sentential agreement in accordance with their intrinsic agreement features (FSG/PL),15 can be used with possessive pronouns in the role of a possessee, and cannot be part of complex numerals. None of these typically nominal properties is available to numerals ≥5 (see fn. 17). Particularly, when it comes to sentential agreement, we only witness the aforementioned default 3.SG.N.

As for expressing a numeral as an integral part of a noun phrase, a simple sentence in isolation does not tell us enough. For example, the English 'five boys' has a different dependency structure from the Polish 'pięć chłopców' (five boys), as shown in the following section.
(8) a. Ciełę podeszło do Bramy.
  "The calf came to the gate."
  
  calf-N,SG,NOM came-3,SG,N to gate

b. Cieł i szczęścię podeszły do Bramy.
  "The calf and the puppy came to the gate."
  
  [calf and puppy]-N,SG,NOM came-3,PL,NV to gate

(9) Pięć chłopców i pięć dziewczyn przyszło do szkoły.
  "Five boys and five girls came to school."

Further evidence comes from the selectional properties of distributive po, which checks LOC on its nominal complements and ACC on the numeral ones (Przepiórkowski 2006 and 2008). Tysiąc, which retains its nominal properties, allows either case-marking; however, it may be LOC only so long as it is not part of a complex numeral, in which case it must be marked ACC.

(10)a. Dal nam *po tysiąc/tysiącu.
   gave-3,SGM us-DAT po *thousand-ACC/thousand-LOC
   "He gave us a thousand each."

b. Dal nam po tysiąc/tysiącu złotych.
   gave-3,SGM us-DAT po thousand-ACC/thousand-LOC złotys-GEN
   "He gave us a thousand złotys each."

c. Dal nam po dwa tysiące/dwóch tysiącach złotych.
   gave-3,SGM us-DAT po two ACC thousands-ACC/two LOC thousand-LOC złotys-GEN
   "He gave us a thousand złotys each."

So, Polish numerals are no longer nominal and their seemingly nominal properties result from the fact that they have been reanalysed as heads of the counted noun’s Num\(^{\circ}\), and thus have become part of its extended nominal projection.

### 3.2 How do we know that they are accusative?

Since Polish demonstratives are adjectival agreeing modifiers, we expect them to agree also with numerals, which they do. Depending, however, on whether they modify the numeral or the quantified noun, they agree with either one or the other (see Babby 1987 and Gvozdanović 1999). With NV nouns we have both options, i.e., a GEN demonstrative agreeing with the GEN noun, or a NOM=ACC demonstrative agreeing with the numeral: te\(_{\text{nom,acc}}\) tych\(_{\text{gen}}\) pięć\(_{\text{nom,acc}}\) kobiet\(_{\text{gen}}\) [these five women]; with V nouns we only have one form: tych [these], which is an ACC=GEN syncretic form: tych\(_{\text{acc,gen}}\) pięć\(_{\text{acc,gen}}\) mężczyzny\(_{\text{gen}}\) [five men]. Crucially, the NOM form (*te pięć mężczyzn*) is unavailable. As the common denominator of the NOM=ACC te *these* and ACC=GEN tych [these] is ACC, it seems plausible that NV te [these] in numeral expressions should be considered ACC, rather than NOM, or else V and NV would have very different syntax, which is not only highly implausible, but also extremely undesirable. I summarise these conclusions in Table 2 below.

### Table 2. Case paradigm of pięć [five] assuming the Accusative Hypothesis (Modern Polish)

<table>
<thead>
<tr>
<th>Case</th>
<th>&quot;these five men&quot; (V)</th>
<th>&quot;these five women&quot; (NV)</th>
<th>&quot;these five houses&quot; (NV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOM</td>
<td><em>te pięć mężczyzn</em></td>
<td>te pięć kobiet(_{\text{gen}})</td>
<td>te pięć domów(_{\text{gen}})</td>
</tr>
<tr>
<td>ACC</td>
<td>tych pięć mężczyzn</td>
<td>te pięć kobiet(_{\text{gen}})</td>
<td>te pięć domów(_{\text{gen}})</td>
</tr>
<tr>
<td>GEN</td>
<td>tych pięć mężczyzn</td>
<td>tych pięć kobiet</td>
<td>tych pięć domów</td>
</tr>
<tr>
<td>DAT</td>
<td>tym pięć mężczyznom</td>
<td>tym pięć kobietom</td>
<td>tym pięć domom</td>
</tr>
<tr>
<td>INSTR</td>
<td>tymi pięćma mężczyznami</td>
<td>tymi pięćmi kobietami</td>
<td>tymi pięćmi domami</td>
</tr>
<tr>
<td>LOC</td>
<td>tych pięć mężczyznach</td>
<td>tych pięć kobietach</td>
<td>tych pięć domach</td>
</tr>
</tbody>
</table>

Additional evidence comes from sentential agreement. Assuming that numeral expressions in structural case contexts are ACC, we predict that as subjects, they should parallel the behaviour of non-nominative subjects. The agreement triggered by non-nominatives happens to be default 3,SG,N and thus the prediction is borne out (Przepiórkowski 2004: 134).

(11)Pięć kobiet/Maryę razilo prądem.
  five-ACC women-GEN/Mary-ACC struck-3,SG,N electricity-INST
  "Five women/Mary got an electric shock."

Further evidence comes from participial agreement, where we witness ACC and GEN forms of the participle (Przepiórkowski 2004: 135):

(12)a. Sześć samolotów zostało zakupione/zakupionych we wrześniu.
   six-ACC planes-GEN stayed-3,SG,N bought-NOM-GEN in september
   "Six planes were bought in September."

b. Sześći niewolników została *zakupienia/zakupionych w 1768r.
   six-ACC slaves-GEN stayed-3,SG,N bought*-NOM-GEN in 1768
   "Six slaves were bought in 1768."

Noting that such agreement is only possible in the passive, I propose\(^{18}\) that it should be treated in terms of adjectival (participial) agreement as in Chomsky (1999), where during the cyclic movement of the object to the subject position, it must have moved through the consecutive escape hatches where at some point the participle finds itself in the scope of the numeral to receive GEN. This analysis, however, leaves unexplained the NOM case on the participle in (12a) (bold) (as in Samoloty\(_{\text{nom}}\) zostaly zakupione\(_{\text{nom}}\) [Planes were bought] without the preceding numeral). I propose here that there are good reasons to believe that this concord is erroneous. We can see that only sześć (12a), but not sześći (12b) triggers this concord, even though both are ACC forms, just in different genders (V and NV respectively). While the form zakupionych is undoubtedly pi, zakupione is ambiguous between SG,N and PL,NV. Since sześć apart from

\(^{18}\) Examples (12) are Przepiórkowski’s, but since he does not elaborate on how the two agreement options arise, the presented analysis is my own.
its numeral use may also be used as a neuter noun in definitions, or in sentences where we name or refer to the number 6 as in (13), I propose then that the concord in (12a) results from over-generalisation of the properties of the neuter noun sześć onto the homophonous numeral sześć.

(13a). Sześć było moin szczęśliwym numerem /liczbą parzystą.
Six was my lucky number/an even number.

b. Twoje sześć jest krzywo napisane.
Your six [written number] is crooked, my six was deemed as written the nicest.

Notice the forms of the participles, which can only be analysed as agreeing with the SG.N

4 Accounting for the Accusative Hypothesis

4.1 A light preposition (p) as the source of ACC case in Polish numerals

Following Pesetsky and Torrego’s (2004) proposal, where case is a reflection of tense, and where (functional) prepositions are also instances of tense, I suggest the following: Polish numeral expressions are introduced by a light preposition (p) which constitutes the source of their ACC case. It is light in the sense that it is transparent to the outside case-checkers and theta-role assigners (Franks 2002). It is merged with D(P) (inserted at the root in accordance with the Extension Condition, Chomsky 1995); if it were to project, the phrase marker would result in a PP; instead, I propose that it does not project, but becomes the Spec of DP. Being both maximal and minimal (p//pP), it may also undergo m(orphological)-merger with D (like Matrasz’s 2006: 86) Saxon genitives. D projects and therefore the phrase marker remains a DP.

The light p represents (interpretable)T and its relation with u(interpretable)T on D results in ACC case. Its transparency to the outside case-checkers translates here into p’s de-fectivity: it is a defective iT which checks uT on D but cannot mark it for deletion (hence D’s further eligibility to case-checking). P&T make a similar proposal for unaccusative verbs assumed to have a defective φ-incomplete T* which “acts as a probe, just like nondefective T, triggering agreement and potentially movement, but it fails to mark uninterpretable features of its goal for deletion” (P&T 2004: 512). If unaccusative verbs indeed have defective T*, then the Russian examples of Accusative Unaccusatives (Lavine and Freidin 2002: 258) and Polish nos-to constructions constitute evidence that such a defective T checks ACC case.

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(18) Polish -na/-no constructions⁹
   a. Maria wezwano do sądu.
      'Mary was called to court.'
   b. Amerykę odkryto przypadkiem.
      'America was discovered by accident.'
   c. Marii nie wezwano do sądu.
      'Mary was not called to court.'
   d. Ameryki nie odkryto przypadkiem.
      'America was not discovered by accident.'

   Since the ACC object of unaccusatives moves to Spec,TP, it means that its uT has not
   been deleted by To.² It does not exhibit NOM after checking its uT against Tp because NOM
   is less marked than ACC. Here, I follow Caha’s (2009) analysis of case-inclusion, where
   NOM is analysed as the least marked case, ACC as the second least marked case and so on:
   each next case is a composite of the previous one and some feature X. It follows then that a
   DP spells out the highest (most complex) case feature and even if it later on checks another
   one, it will only become visible if it is more complex than the ones already borne.

   Numerals expressions with their visible uT (not marked for deletion by the defective light
   p ((T)) are thus eligible for probing by both Tp and To. Due to this, they may still interact
   with the tense features of the matrix probes. This is most clearly visible in the object position,
   where the numeral expression, like any other DP, takes on the cases offered by the verbal To.
   In the subject position, similarly to the situation with Accusative Unaccusatives, the effects of
   NOM case checking will not be visible due to NOM being the least marked case.

4.2 Combining the two proposals: light p selects a lexicalised Num⁸

   From a purely descriptive perspective, light p must be assumed to select a lexicalised Num.
   This is because only numerals ≥5 and vague numerals (masy [mass], troche [a bit], kopie
   [gros], etc., as well as some distinguished V/NUM: kilka [a bit], kilka [wit], kilka [several] and wielu
   [many]), which I have argued to lexicalise Num, are intrinsically ACC. This is not far from what
   other prepositions co-occurring with numeral expressions select: distributive po selects all quantified NumPs (including paucal ones); the so-called (prepositional) adnumeral operators, i.e., approximate z [around],około [around], do [up to], and ponad [over] select not only quantified NumPs, but also M(ass)/Ps. Importantly, there is a difference
   between these Ps and the null light p: lexical Ps carry particular semantics, whereas p does not.
   Nevertheless, there are important similarities between them: (i) they all allow case-transmission,
   and (ii) they are theta-role transmitters (the numeral expressions in their complements
   remain arguments of the selecting verbs). Consider examples with około (about) (checking structural ACC and GEN):

   (19) a. Czekal okol o godziny/minuty/tygodnia. → structural GEN checked
       waited-1.SG.LM around hour-GEN/minute-GEN/week-GEN by około
       'I’ve waited about an hour/minute/week.'
   b. Było około pięćście tysięcy Polaków. → structural ACC & GEN
       were-3.SG.N around five-ACC/five-GEN thousands-GEN Polen-GEN checked by około
       'There were around five thousand Poles.'
   c. Nie było około *pięćuisine tysięcy Polaków. → GEN of negation
       not were-3.SG.N around *five-ACC/five-GEN thousands-GEN Polen-GEN
       'There were around five thousand Poles absent/missing.'
   d. Pomogli około pięciu tysiącom Polaków. → lexical INST checked V
       helped-3.PL around five-INST/DATA thousands-INST Polen-GEN
       'They helped around five thousand Poles.'
   e. Osięgają się około pięcioma tysiącami Polaków. → lexical INST checked by V
       care-3.PL self around five-INST/DATA thousands-INST Polen-GEN
       'They are taking care of around five thousand Poles.'

   I would like to argue that około instantiates an overt light p (notice that it also checks structural
tase, as opposed to the lexical cases checked by regular Ps) and should also be assumed to
merge in Spec,DP like the light null p (cf. (16)). The cases on the numeral expression
in (19) are the ones governed by the relevant verbs whenever more marked than the ones
checked by p. The light preposition is transparent, just as expected. Also, it does not seem to
project, i.e., the numeral expressions remain noun phrases, and thus may be further selected
by regular P such as distributive po (około behaves as if it were not there) (20). While ponad
[over] behaves similarly to około [around] (one can substitute ponad for około in all of the
above examples; although it must be noted that ponad may also combine with NOM),
approximate z [around] (hence *około), though transparent to case-marking and theta-role
assignment, does not allow co-occurrence with distributive po. This might indicate that *około
actually projects into PP above DP. There is some evidence that this indeed may be the case.
In Polish we see combinations of two Ps, one below the other, and interestingly, they always
seem to involve a light p as the lower one (*około simply does not allow such embedding).
co-occur with overt light prepositions, but do, as argued here, co-occur with the null one. If, as with light prepositions further selected by the distributive 

take place gains support from the examples with pronouns and numerals, which can never 

oblique case positions unless preceded by a preposition (examples from Franks 2002: 166,
b. Jovan je rukovodio (*sa) jednom fabrikom.

Jovan-3SG managed one-INST factory-INST

Jovan managed one factory.

According to Franks (2002: 166), numeral expressions with ≥5 are fine in lexical GEN contexts because they are licensed in GEN DPs (23a–c); due to this, however, they are ungrammatical in DAT (23a) and INST (23b) contexts as lexical case cannot be triggered by any other case (lexical or otherwise), even if it is a more marked one. It is only with the indeclinable ≥5 (25) (Giusti and Leko 2004: 127) that the proposition is necessary in oblique case-contexts beyond GEN; with the declinable 1–4 (see (24b) and (26b)), the situation parallels that in Polish: 1–4 are adjectival (Comrie 1992), are not Num heads, and cannot assign GEN to their complement. What is particularly interesting is that this proposition is otherwise disallowed with the very same verbs if the object is not a numeral expression, or if it contains numerals 1–4, which is proved by the examples in (26). Franks refers to sa as a light preposition and I have adopted this term to apply to my null p. He claims that it is inserted as a last resort mechanism to take on the lexical case that the numeral expression cannot take on. It is also responsible for transmitting the theta-role assigned by the verb. As we can infer from the above examples, the absence of p with tri [three] (24b) and jeden [one] (26), i.e. paucal adjectival numerals, which I assume to be specifiers of NumP, the SC overt p shows selectional properties of my Polish null light p proposed above: it selects lexicalised Num heads (which is also why it does not co-occur with paucal numerals in either language).

Franks (2002) suggests that SC numeral expressions are licensed in GEN contexts, but this would make SC very different from Polish or Czech. I propose a common analysis of these languages. The fact that numeral expressions are available in GEN contexts in (22) without the overt p may simply result from the ACC–GEN syncretism also present in Serbo-Croatian; just as it is impossible to tell the difference between Polish ACC and GEN of pięć kobiet [five] in examples like: Widziałem pięć kobiet [I saw five women] vs. Balem się pięć kobiet [I feared five women], so it is impossible to tell the difference between ACC and GEN of pet ljudi [five people] in SC (22). This need not mean that all numeral expressions in SC are GEN, they may as well be ACC like their Polish counterparts. Thus SC (22) is reminiscent of Polish, where the ACC virile numeral expressions find themselves in ACC contexts because they are licensed in GEN DPs (23a–c); due to this, however, they are ungrammatical in DAT (23a) and INST (23b) contexts as lexical case cannot be triggered by any other case (lexical or otherwise), even if it is a more marked one. It is only with the indeclinable ≥5 (25) (Giusti and Leko 2004: 127) that the proposition is necessary in oblique case-contexts beyond GEN; with the declinable 1–4 (see (24b) and (26b)), the situation parallels that in Polish: 1–4 are adjectival (Comrie 1992), are not Num heads, and cannot assign GEN to their complement. What is particularly interesting is that this proposition is otherwise disallowed with the very same verbs if the object is not a numeral expression, or if it contains numerals 1–4, which is proved by the examples in (26). Franks refers to sa as a light preposition and I have adopted this term to apply to my null p. He claims that it is inserted as a last resort mechanism to take on the lexical case that the numeral expression cannot take on. It is also responsible for transmitting the theta-role assigned by the verb. As we can infer from the above examples, the absence of p with tri [three] (24b) and jeden [one] (26), i.e. paucal adjectival numerals, which I assume to be specifiers of NumP, the SC overt p shows selectional properties of my Polish null light p proposed above: it selects lexicalised Num heads (which is also why it does not co-occur with paucal numerals in either language).

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5 Conclusion

The presented analysis has been inspired by Pesetsky and Torrego’s (2004) idea that case is a reflection of tense checking. Since Polish numeral expressions have been believed for almost two hundred years to be intrinsically ACC (the Accusative Hypothesis) and no one so far has answered the question of where this ACC comes from, this puzzling issue calls for investigation. I began with an overview of Polish cardinals emphasising their diachronic development, which is where I found the original source of this ACC: it stemmed from the assimilation of the accusative of measurement by 5–9 from vague numerals, some of which survived to this day as fossilised accusatives, and was further strengthened by the introduction of the ACC–GEN syncretism in the PL. I have also proposed how numeralisation of numeral nouns into numerals proceeded in Polish in the way that complements the Accusative Hypothesis, i.e., they began to lexicalise (the counted noun’s) Num. To account for the syntactic source of ACC, I presented data pointing to the existence of a light null preposition, which in Pesetsky and Torrego’s (2004) analysis would instantiate a defective tense head able to check uT on D, but unable to mark it for deletion. A defective tense head of this type has been shown to exist in Accusative Unaccusative and no-to constructions, both of which have (structural) ACC subjects. The light p which selects a lexicalised Num has been argued to instantiate a similar case-checker, and thus shown to check ACC against the contents of Num.

Empirical evidence from Polish and the related Serbo-Croatian was given in support of the existence of overt light p. As an upshot of these findings, it has also been proposed that the numeral systems of Polish and Serbo-Croatian are more alike than so far assumed.

References


5

On the Positions of Subjects and Floating Quantifiers in Appositives

KATHLEEN M. O’CONNOR

The goal of this paper is to examine the presence of floating quantifiers in non-finite appositives consisting of an NP, PP or AP predicate. Through an examination of the positions occupied by FQs with respect to adverbs, it is shown that appositives contain a number of DP-related projections that can host FQs and a PRO subject. The analysis thus provides evidence that appositives do not consist of a single constituent, but are rather more clausal in nature, approximating the syntactic structure of finite clauses.

Keywords: syntax, appositives, floating quantifiers, adverbs

1 Introduction

This paper is concerned with a particular aspect of the micro-syntax of non-finite non-restrictive modification of a nominal antecedent of the type in (1).

(1) a. John, my best friend, lives down the street.
   b. John, happy about the report, congratulated everyone on a job well done.
   c. John, in hospital with flu, won’t be coming to the meeting.

In all three of the sentences in (1), the noun phrase John is followed by a modifier set off from the rest of the sentence by commas. In (1a), the italicized modifier is another NP, in (1b) it is an Adjective Phrase and in (1c) a Prepositional Phrase.

In the literature there is considerable debate as to whether these three types form a homogeneous class and as to what they should be called. The present paper follows Doron (1992) and O’Connor (2008) in assuming that all three types form a single class insofar as they are all predicates and share similar syntactic properties. We also follow these two papers in calling this class of modifiers appositives, though once again there is disagreement about this issue in the literature (see Acuña-Fariña 1999 and O’Connor 2008 for a summary of the topic).

Beyond the terminological debate, there are also questions concerning the syntactic structure of appositives. For example, DeVries (2006) assumes that appositives consist of a single constituent. On the other end of the spectrum are analyses that claim a much larger structure, essentially equivalent to that of a finite clause (Heringa 2011, McCawley 1995, O’Connor 2008).

The presence of adverbs and floating quantifiers, along with conjunctions, is evoked by researchers interested in demonstrating that appositives have a clausal structure. McCawley (1995) and O’Connor (2008) both point out the presence of adverbs that typically modify clauses. Examples are provided in (2) where the relevant adverbs are given in bold.

(2) a. Albert Swenson, recently the winner of the Illinois State Lottery, has just bought a house in Bermuda. (McCawley 1995: 197)
   b. Fill out the form provided by your state’s health department, usually available from your local hospital. (New York Times online, 18/11/2003)

A second source of evidence comes from the presence of conjunctions. In O’Connor (2008: 155–156), it is shown that appositives can be introduced by a variety of different conjunctions, which is interpreted as demonstrating that appositives have a CP layer. Examples are given in (3).

(3) a. Einstein biographers, though aware of Dr. Freundlich’s role as a disciple and experimentalist, have made little or no use of this correspondence. (New York Times online, 24/03/92)
   b. Penders, while unhappy about the loss, said he was satisfied that the conference was beginning to attract more attention. (New York Times online, 05/02/90)

The third piece of evidence is the presence of quantifiers that are associated with predicates. Doron (1992: 31) uses the example in (4) to show that floating quantifiers can appear in appositives.

(4) The men, both/all doctors, were awarded medals.

Doron’s use of the term floating quantifiers is perhaps somewhat of an overstatement. While both and all can float from a subject, they can also appear in subject position and are not necessarily floated. Take the examples in (5), based on Doron’s example in (4).

(5) a. All/Both are doctors.
   b. They all/both are doctors.
   c. They are all/both doctors.

In (5a), the quantifiers are in the subject position, whereas in (5b) and (5c), they quantify the subject but are “floated” from the subject. The fact that appositive modifiers can contain potentially floating quantifiers is important insofar as an analysis of the positions occupied by these quantifiers could contribute to the mapping of some of the different DP-related projections in appositives. Significantly, it shows that appositives may contain a subject and subject positions, as well as other DP positions reserved for

I would like to thank Liliane Haegeman for helpful comments on a previous version of this research.
floating quantifiers.

This brings us to the goal of the present article. We will demonstrate that an analysis of these potentially floating quantifiers and their position with respect to adverbs furnishes evidence supporting the clausal analysis of appositives. This article is organized as follows: in section 2, we present theoretical background on floating quantifiers and DP-related positions. Section 3 explores the position of quantifiers in appositives and presents an analysis of appositives. Section 4 briefly concludes the article.

2 Floating quantifiers and DP-related positions

This section presents the background for the analysis. We first consider relevant research on floating quantifiers. Then, in subsequent sections we discuss the presence of adverbs in appositives and the relevance of these adverbs for an analysis of floating quantifiers and DP-related projections.

2.1 The quantifiers all, both and each

In this section we will provide relevant background information on the quantifiers all, both and each. The discussion is restricted to quantifiers that are associated with a subject, as object quantifiers (e.g., John likes all the girls.) are irrelevant to the cases under examination.

As noted above, these three quantifiers are often referred to as floating quantifiers (henceforth FQs) because they can be separated from the DP that they quantify, as in (6).

(6) a. All the men have left.
   a'. The men have all left.
   b. Both the men have left.
   b'. The men have both left.
   c. Each of the men have left.
   c'. The men have each left.

In such cases, there appears to be little or no difference in meaning between the examples where the quantifier appears before the DP (6a–c) and those where the quantifier has floated (6a’–c’) (e.g., Sportiche 1988).

Furthermore, in languages that mark quantifiers for gender and number, a floated quantifier agrees with the quantified DP, as in the examples in (7) drawn from French.

(7) a. Toutes*/Tous les femmes sont venues.
   all-fem.-pl./all-masc.-pl. the women are come
   ‘All the women have come.’
   a'. Tous*/Toutes les hommes sont venus.
   all-masc.-pl./all-fem.-pl. the men are come
   ‘All the men have come.’
   b. Les femmes sont toutes*/tous venues.
   the women are all-fem.-pl./all-masc.-pl. come
   ‘The women have all come.’
   b’. Les hommes sont tous*/toutes venus.
   the men are all-masc-pl/all-fem.-pl. come
   ‘The men have all come.’

The agreement facts, along with the identical interpretations of sentences with and without a floated quantifier, have led to the assumption that pairs of sentences such as those in (6) must have an identical structure at some point in their derivation.

Another relevant observation is that the positions that FQs can occupy coincide with adverb positions. This is seen in (8), taken from Sportiche (1988: 442).

(8) a. The carpets (all) will (all) have (all) been (all) dusted for two hours.
   b. The carpets (probably) will (probably) have (probably) been (probably) being
   (probably) dusted for two hours.

Based on such examples, it may seem that FQs are rather free in their distribution. However, it has been observed that the same locality conditions that hold between an antecedent and an anaphor also hold between the subject and the FQ, as in (9) (Kayne 1981: 196).

(9) *The mother of [my friends]i has alli left.

In (9), the DP my friends is embedded under another DP and thus is too low to c-command the FQ all. The same locality effect is found when the quantified DP and the FQ are found in two different clauses, as in (10) (Kayne 1981: 196).

(10) *[My friends]i think that I have alli left.

To account for these various facts, a number of analyses have been proposed, based essentially on the notion of stranding. In such analyses, it is assumed that, at some point in the derivation, the subject DP and the FQ form a single constituent. During the derivation, the DP moves, leaving the FQ behind. In one of the earliest stranding analyses, Sportiche (1988) assumes that the subject DP and the FQ are in SpecVP at deep structure and that the subject raises out of the VP, leaving the FQ behind. The fact that
the two form a single constituent explains the observed agreement facts in languages such as French. This account is also able to explain the locality effects. The subject DP must, for independent reasons, c-command its trace. Since there is always a trace next to the FQ, it appears that the subject DP must c-command the FQ. Finally, regarding the parallel distribution of FQs and adverbs, Sportiche claims that this is an epiphenomenon stemming from the fact that adverb positions are adjacent to the base position of the subject+FQ inside the VP, creating the illusion of a parallel distribution.

Though Sportiche's analysis represents a turning point in the analysis of FQs, it is not without problems (see Bobaljik 2003 for a summary). We will not consider all of them here, but one issue that is relevant concerns the internal structure of the subject DP+FQ. Sportiche claims that the FQ is part of the subject DP and that the subject DP is able to move from this position to strand the FQ. He does not specify the composition of the subject-FQ complex, nor does he formalize the mechanism responsible for moving the subject away from the FQ. Shlonsky (1991), on the basis of facts from Hebrew, suggests that the subject DP+FQ constituent is composed of a Quantifier Phrase (QP) headed by the quantifier with the subject DP as its complement. When the subject DP raises to its surface position, it passes through SpecQP, leaving a trace behind.

The above analysis assumes that the FQ remains in its base-generated position in SpecVP. However, Haegeman (2006) demonstrates that an adverb of manner can intervene between an FQ and a lexical verb:

(11) a. The students will all patiently wait for the answer.
    b. *The students will patiently all wait for the answer.

This is unexpected under Sportiche's (1988) analysis: the FQ should always be adjacent to the lexical verb if it remains in its base-generated position. This fact corroborates the observation based on (8) above that the FQ can occupy several different positions in the clause. The implication is that the subject DP+FQ move together through one or more projections that are available to host the DP and that at some point during the derivation, the subject DP moves out of the QP and leaves the FQ behind. In cases where the FQ appears with the subject in the subject position (see (6a–c) above), the Q is never stranded and always moves with the subject DP.

A final point that is particularly relevant to the appositives under discussion concerns the type of subject that can be quantified. The above examples make use of quantified DPs that appear on the surface. In the appositive examples, there is no surface DP with the quantifier. In fact, Sportiche (1988: 436) demonstrated that an FQ can also quantify PRO.

    b. Controlled PRO: Ils ont décidé de PRO tous partir.

The implication then is that appositives contain a PRO subject. Concerning the appositives under study, the question is just what positions are available to the quantified PRO. Does the FQ+PRO remain in its base-generated position, or are there higher positions available that can host the PRO and/or FQ? If the FQ is restricted to a lower position, then this would argue for a restricted syntax for appositives. If, on the other hand, the FQ can be found in higher positions, then this would provide evidence that appositives have a more extensive, clause-like syntax.

In the next section, we consider the presence of adverbs in appositives and show how they can be used as a diagnostic for syntactic structure, in particular the positions occupied by FQs.

2.2 Adverbs and DP-related projections

Broadly speaking, there are two approaches to the position of adverbs in the clause. Under the adjunction approach (e.g., Ernst 2002, Frey 2003, Haider 2004, Shaer 1998), different classes of adverbs are adjoined to different projections in the clause as a function of their semantic class. A second approach, the functional specifier approach, assumes that each class of adverbs is located in the specifier of a functional projection whose head contains semantic features shared by the adverb class in question (e.g., Alexiadou 1997, Cinque 1999, Laenzlinger 1996).

Both approaches have their advantages and drawbacks. For the purposes of the present paper, we will adopt the functional specifier approach for two reasons. First, as it is part of the cartographic approach to syntax (see Shlonsky 2010 for a review), the functional specifier approach allows us to pinpoint more precisely the different positions occupied by elements in the syntax. Second, Cinque (1999) specifically addresses the question of FQs and DP-related positions.

Cinque bases his analysis on a comparison of the order of adverb classes across languages. His conclusion is that the order of different adverb classes is identical cross-linguistically. He thus proposes, as described above, that each adverb class is associated with a dedicated functional projection and that adverbs are located in the specifier of the functional projection associated with the class to which they belong. He further claims that these functional projections are rigidly ordered and comprise a cross-linguistic universal. Cinque’s hierarchy of adverb classes and functional projections is given in (13).

The adverb in italics is a representative member of the class to which it belongs and the subscript gives an abbreviated name for the class. The hierarchy begins with the highest adverb class, speech act adverbs, and continues down to the lowest class, Aspect...
Singular Completive (II).

(13) frankly

> fortunately

> allegedly

> probably

> once

> then

> perhaps

> almost

> extremely

> totally

> completely

> immediately

> always

> never

> briefly

> characteristically

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We can thus divide the adverb hierarchy into two sets: post-subject adverbs are those that the subject must precede on the surface. Pre-subject adverbs are the adverbs that can precede or follow the subject. These two groups are shown in (18).

(18a) Pre-subject adverbs: frankly, necessarily, probably, possibly, perhaps, willingly, inevitably, cleverly, characteristically, fast/early, currently.

(18b) Post-subject adverbs: already, just, simply, mainly, still, really, particularly, very, thoroughly.

As for appositives, McCawley (1995) noted that appositives can contain adverbs (see (2a) above). In a systematic comparison of Cinque’s adverb hierarchy with data from appositives, O’Connor (2008) shows that all of the adverb classes comprising Cinque’s hierarchy can be found in appositives, with the exception of the highest class, that of speech act adverbs (cf. Heringa 2011). Given Cinque’s model, we should be able to use the relative positions of adverbs and FQs to determine whether or not these DP positions are available in appositives and whether FQs can indeed be located in subject positions. In the next section, we will look at what Cinque says about the interaction of adverbs and FQs.

2.3 Adverbs and floating quantifiers

Cinque (1999), in his exploration of DP-related projections, examines the positions that can be occupied by FQs relative to the post-subject adverbs and negation. He finds that FQs can appear in the positions shown in (19).

(19) not > FQ > already > no longer > FQ > still > FQ > completely > well

To summarize, an FQ can appear between not and already and then between no longer and still and between still and completely. No FQs can appear after completely or between no longer and already. The reasons for this are unclear, though Cinque suspects that it may be related to the scope of negation and the interpretation of the quantifier. In (20), this distribution is illustrated with full sentences (Cinque 1999: 118–120).

(20) a. They are not all already here.

b. *They are already all no longer available.

c. They are no longer all still coming to class.

d. They are still all completely redoing the work.

Extrapolating from these facts and Cinque’s model of clause structure, if an FQ occurs higher than already, then it must be in a subject DP position. If an FQ is located below already or one of the other post-subject adverbs, the conclusion is that the adverb is in a lower DP-related position, but not a position that can be occupied by the subject. In either scenario, the FQ has moved from its base-generated position inside the VP: the adverb hierarchy is above the VP, whereas an FQ must be above completely, leading to the conclusion that the FQ has moved from its base position.

In this section, we have looked at FQs, the hierarchy of adverbs and functional projections developed in Cinque (1999) and the potential for DP-related positions relating to subjects and FQs among the adverb hierarchy. The prediction for appositives is very clear. If an FQ is located lower than already or one of the other post-subject adverbs, then we have evidence for DP-related positions among these lower adverbs. If the FQ is higher than already, then we can conclude that it is in a higher DP-related position, potentially in a subject position. In the next section we will look at the data for appositives.

3 FQs and adverbs in appositives

We will start by looking at the presence of FQs among the post-subject adverbs. As seen in (21), FQs can occur lower than already and adverbs lower than already.

(21) a. The beneficiaries of the consolidation, already both Colgate agencies, are Young & Rubicam and Foote, Cone & Belding. (New York Times online, 02/06/86)

b. In his 13 seasons with Chicago, Payton rushed for 16,726 yards on 3,838 carries, still both NFL records. (New York Times online, 02/11/99)

c. The wage, not always all in cash, is far lower than urban or industrial levels of payment. (New York Times online, 15/12/10)

d. Between them, the five members, still all under 25, have 1.1 million Twitter followers and have toured in the past two years with No Doubt and Green Day. (Times online, 15/11/2010)

Since, as noted in section 2, the subject must be located higher than already, the clear conclusion is that FQs can indeed be floated away from a subject position in an appositive. The FQ in these examples must be in a DP-related position that cannot host the subject. This means that appositives contain DP-related positions among the post-subject adverbs.

Turning to pre-subject adverbs, we can see in (22) that FQs can indeed occur among these adverbs. It is important to note that the adverbs are lower than the FQ in each case: this means that the FQ must be in a potential subject position. We will not provide...
examples for all of the pre-subject adverbs, but a selection should be sufficient to show that there are subject positions among the pre-subject adverbs.

(22)a. In addition to the ample salad, all entrees arrived with brown rice pilaf, assorted fresh vegetables, a variety of breads (all unfortunately soft and spongy) and bread sticks…. (New York Times online, 27/06/99)
b. In May 2005, astronomers discovered the two moons, each probably less than 100 miles wide, using the Hubble Space Telescope. (New York Times online, 23/6/06)
c. …Two passengers – identified as S. Dzhebirkhanova and Amanta Nagayeva, both evidently Chechens – have drawn the scrutiny of investigators. (New York Times online, 28/08/04)
d. This is a meeting between two Pro Bowl players, both perhaps in the top five at their respective position. (New York Times online, 13/09/09)
e. And yet somehow this small area manages to make room for some 80 restaurants and 60 bars – almost all necessarily small. (New York Times online, 07/10/90)
f. Furthermore, despite early introductions of pigs, several rats, a possum and numerous plant species – all usually kisses of death for native species and ecosystems across the insular Pacific – there has been relatively little extinction across the Solomons. (New York Times online, 25/02/11)

These results have interesting implications for the analysis of appositives. The presence of the adverb projections along with their accompanying DP-related projections indicates that appositives have a large amount of structure in the IP layer above the predicate. In terms of the different analyses reviewed in the introduction, the evidence presented here supports those that claim that appositives are larger than a single constituent and are closer to finite clauses in their structure.

To sketch out an analysis based on these data, let us assume that the subject in these appositives is PRO. There are at least three reasons for this. First, PRO is generally assumed to be the subject of non-finite predicates. Second, Sportiche (1988) has shown that FQs can quantify a PRO subject. Third, appositives can contain anaphors that must be bound by another element, presumably PRO (O’Connor 2008). This is shown in the following examples.

(23) a. Durrell – himself a former diplomat – was born in India to an English father and Anglo-Irish mother. (Guardian, 29/04/02, p. 1, col. 2)
b. ‘He told me he was thinking about it,’ Steve Grossman, himself a former chairman of the Democratic National Committee, said on Monday. (Guardian, 10/11/04, p. 11, col. 5)
c. Last month they organised a 69th birthday dinner for him in the Gothic quarter’s Nostromo Club, where owner Cecilio Pineda, a former ship’s captain himself, gives lesson on nautical theory and organises an annual literary award for writing about the sea. (Guardian, 17/02/04, p. 7, col. 3)

Following Shlonsky (1991), we can assume that the PRO subject heads a DP that is the complement of a QP headed by the Q. This QP+DP starts in the low subject position: either inside vP (Grimshaw 1991) or in the Spec of a PredP (Bowers 1993). When the FQ ends up among the post-subject adverbs, the PRO subject has moved out of the QP, passing through SpecQP and leaving a trace. PRO then moves to a higher subject position to satisfy an EPP constraint. The FQ is thus stranded in a lower DP-related projection or may be even lower, i.e., in its base-generated position.

When the Q is located among the pre-subject adverbs, the analysis is less clear. In fact, it is impossible to tell whether the PRO subject has moved out of the QP to occupy a higher position, thus stranding the Q, or whether the QP+PRO has remained intact, with the entire complex moving to a higher position, analogous to the finite example in (6a–c). No matter which is the case, it is clear that the Q is in a DP-related position among the pre-subject adverbs.

Both analyses provide support for the clausal analysis of appositives. Taken together with the evidence presented in section 1, appositives appear to have an extensive syntactic structure. First, the examples with conjunctions show that the top of an appositive can have a CP-layer. Second, assuming O’Connor’s (2008) analysis of adverbs together with Cinque’s (1999) account of adverbs, it seems that appositives have an extensive set of functional projections related to adverbs in the IP layer. Third, the evidence presented in this section shows that appositives contain a number of DP-related projections among the adverb projections. The DP-related projections are able to host FQs and the PRO subject of predication.

4 Conclusion

We have shown here that appositives contain a number of DP-related projections among their hierarchy of adverb projections. These projections can host FQs and the appositive’s PRO subject. Along with other pieces of evidence furnished by adverbs and conjunctions, the presence of these projections supports a clausal analysis of appositives. In other words, it appears that appositives have a structure similar to that of finite clauses. Further research is necessary, however, to determine just how far this resemblance goes and whether there are significant differences between appositives and finite clauses.

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Some Japanese adjectives allow the alternating forms with or without -no in the adnominal modification, but others not. In this paper, I argue that with its peculiar interpretations, the adjective with -no represents the indirect modification in the sense of Cinque (2010). Moreover, -no is not a mere case marker or modifying marker, but is a realization of the classic copular verb nari in Japanese. I also propose that the structure of the adjective with -no involves pro that is base generated in the subject position of the relative clause. With this structure, I show that a relative clause in Japanese is not a relative clause in terms of Kayne (1994), but a pure sentential modifier that is merged in the designated specifier position of NP as adjunct.

**Keywords:** Japanese adnominal modification, direct/indirect modification, Japanese relative clause

1 Adnominal modification with and without -no in Japanese

1.1 The cross- and intra-linguistic fluidity of adjectives

Since Dixon’s pioneering study (1982), the adjective category is the most problematic one in the study of the parts of speech systems. Nouns and verbs are of crucial importance to the language, and are the most reliable categories that occupy the high-end of the parts of speech hierarchy (Sapir 1921: 121). On the contrary, adjectives show a wide range of cross-linguistic variation. As is well known, some languages like English have adjectives as a productive major class in the parts of speech system, whose members are large and open-classed. But others only have a small non-productive minor class of adjectives which varies from dozens (e.g., Igbo, Hausa, Acoli) to several hundred (e.g., Japanese). All these typological variations make it difficult to give an universal, cross-linguistic definition of adjectives. However, following essentially Croft (2001), let us assume that there are typological prototypes which should be called noun, verb, and adjective (Croft 2001: 63). Specifically, we can assume that there are prototypical or unproblematic combinations of semantic concept (type) and syntactic function (Croft 2001: 88). Typological prototypes treat the lexical categories in a uniform manner, and the cross-linguistic variety of adjectives can be paraphrased as the cross-linguistic variety of realization of semantic concept like PROPERTY. Besides the unmarked realization of the parts of speech, each language has its own way of mapping semantic concept and its syntactic function. This means that each language tends to make optimal use of their lexical resources (Anward 2000: 38), and in the languages whose adjective class is small and closed, the semantic concept PROPERTY is expressed by verbal form or nominal form. Therefore in these languages the distinction between adjectives and nouns, or between adjectives and verbs is not so clear-cut, with only a few minor differences to separate adjectives from nouns or verbs (Bhat 2000: 48).

But even within a language, whose adjective category is well-established, the semantic concept PROPERTY is not always expressed using adjectives. Some property concepts are expressed by nouns (e.g., happiness, goodness), or by verbs (e.g., differ, resemble). That is to say, the adjective category has a doubly fluid nature cross- and intra-linguistically.

One of the examples of this intra-linguistic fluidity of PROPERTY concept can be found in Japanese adnominal modification form with and without -no. In the next section, after reviewing Japanese adjectives, I lay out and exemplify some peculiarities of this alternation.

1.2 Japanese adjectives

One of the peculiarities of Japanese adjectives is that there are two types of adjectives: adjectives and adjectival nouns (Miyagawa 1987: 30). As we have seen in the previous section, Japanese adjectives are non-productive, closed-class category, while the other type of adjective, adjectival nouns, are more productive, open-class category. Both forms have attributive and predicative uses, and are obligatorily placed before nouns to modify them in the attributive use. In the predicative use, adjectives have a variety of conjugational endings, such as the past and non-past tense ending.

Notice that with these conjugational endings, Japanese adjectives are more like verbs, and can be predicates without the help of the copular verb. In traditional Japanese grammar, adjectives and verbs are considered to form a category called yoogen (a word with declined or conjugated endings). On the other hand, although scholars differ on this point, the adjectival nouns are more like nouns with the copular verb da, and they do not have their own inflection. About the categorial status of the adjectival nouns, we do not go into detail in this article.

In the following section, we present some data indicating that some adjectives have two adnominal modification forms.

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1. Part of this paper was presented at the GLiP 7 held in December 2011 at the University of Wrocław. I would like to thank the audience there for their helpful comments and suggestions.

2. All we can assume is that a typological prototype of adjective is modification by a property (Croft 2001: 89).

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1.3 Some problems of the alternation with and without -no

The purpose of this section is to show some empirical problems of the alternation with and without -no. Some Japanese adjectives have this alternation. For example, in (1), (2), (3), we have two adjectival adnominal forms.

1. (a) aka-i hon  b. aka-no hon
   'a red book'  'a red book' or 'a book of red'
2. (a) too-i (chika-i) ie  b. tooku-no (chikaku-no) ie
   'a distant (nearby) house'  'a distant (nearby) house'
3. (a) shikaku-i hako  b. shikaku-no hako
   'a square box'  'a box of square'

However, as we will see below, not all the adjectives in Japanese have this alternative form. A close scrutiny of the data has revealed that adjectives that allow this alternation are limited to some adjectives of color (aka-i [red], shiro-i [white], kuro-i [black]), of distance (too-i [distant, far], tika-i [near]), and of shape (maru-i [round], shikaku-i [square]). No other adjectives such as utsukushi-i [beautiful] or adjectival nouns such as kirei-na [beautiful] can have this alternative form with -no.

(4) Adjectives:
   a. utsukusi-i/*utsukushi-i-no musume
      'a beautiful girl'
   b. yasasi-i/*yasasi-i-no hito
      'a kind person'

(5) Adjectival nouns:
   a. kirei-na/*kirei-no musume
      'a beautiful girl'
   b. sinsetsu-na/*sinsetsu-no hito
      'a kind person'

As is usually observed in the literature, Japanese -no has a very complicated nature, and has various functions like pronoun, complementizer, genitive case marker, etc. However, it is assumed that when -no is inserted before a head noun in the nominal phrase, it is interpreted as genitive case marker, like 's in English. But in general, genitive case marker -no cannot be inserted between adjective and noun, as is observed above. All these Japanese data bring us, at least, four problems (6).

6. a. Interpretative problem:
   What is the interpretative difference of the two adnominal forms with and without -no?
   b. Identification problem:
   What kind of morphological and syntactic status does -no have?
   c. Explanatory problem:
   Why do some adjectives in Japanese have this alternation with and without -no?
   d. Theoretical implication:
   What is the theoretical implication of the adnominal modifier -no in Japanese?

For these questions to be accounted for, we need to examine the syntactic and semantic properties of the -no in Japanese, and in doing so, I will lay out their theoretical implications. In the next section, let us begin with the interpretative difference between adnominal modifiers with and without -no.

2 The status of -no in the adnominal modification with adjectives

2.1 The interpretative differences between with and without -no

2.1.1 Restrictive meaning with -no

As it is shown below, the two adnominal forms with and without -no are at times interchangeable, other times not.

7. a. Asoko-ni aka-i/aka-no hana-ga aru.
   'There is a red flower.'
   b. Taro-wa aka-i/*aka-no taiyou-o miage-ta
      'Taro looked up at the red sun.'

In (7a), [the red flower] is compatible with both forms, but in (7b) [the red sun] is acceptable only with the form without -no. Then the natural question is what is the interpretative difference between them. Conceptually, it seems possible to say [the red sun], and, as correctly observed by Kishita (2006), if the proper context is given, the -no form becomes acceptable.
(8) (there are many different colored suns painted on the wall)

\[ \text{aka-i/aka-no taiyou-wa kibou-o arawashite-imasu} \]

red/red-no sun-top hope-acc express

‘The red sun expresses hope’  (Kishita 2006: 31)

In (8), the function of the adjective *red of the red sun* is to choose one option between other possibilities specifying the property of color. That is to say, *the red sun* has a restrictive meaning and it can be paraphrased as *the red one*. In (7a), the interpretation is ambiguous between restrictive (with and without -no) and non-restrictive (without -no). Note that the form without -no can have both meanings, as shown in (7) and (8). All these differences can be explained if we assume a direct and indirect (reduced relative clause) modification in the sense of Cinque (2010), summarized below in Table 1.

<table>
<thead>
<tr>
<th>Indirect (reduced) relative clause modification</th>
<th>Direct modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>stage-level (or individual-level)</td>
<td>individual-level</td>
</tr>
<tr>
<td>restrictive</td>
<td>non-restrictive</td>
</tr>
<tr>
<td>intersective</td>
<td>non-intersective</td>
</tr>
<tr>
<td>detecitive</td>
<td>generic</td>
</tr>
<tr>
<td>literal interpretation</td>
<td>possible idiomatic interpretation</td>
</tr>
</tbody>
</table>

Table 1. Summary of direct and indirect modification

The direct and indirect modifications have their own structural sources, and these structural differences must bring interpretative contrasts. Roughly speaking, the indirect modification assumes the relation of relative clause, and has the same readings of predicative adjectives. The adjective with -no in (8) assumes the same *restrictive* interpretation as the indirect modification (Cinque 2010: 28). With this interpretative differences in mind, take a look at more detailed Japanese data.

2.1.2 Typical or essential property cannot be expressed by -no form

The second interpretative difference is the fact that a typical or essential property that is commonly accepted by society cannot be expressed by the adnominal form with -no. Only the adnominal adjectival form without -no is used to express [the red sun] (9a), or [a white cloud] in (9b), for example.

(9) a. Higashi-no sora-ni aka-i/aka-no taiyou-ga noboru

east-of sky-in red/red-no sun-acc rise

‘The red sun is rising in the east sky.’  (Kishita 2006: 31)

b. Sora-ni siro-i/??siro-no kumo-ga ukande-iru

sky-in white/white-no cloud-nom floating

‘A white cloud is floating in the sky.’

Naturally, the redness of the sun is considered as typical property of the sun, at least in Japan (for example, when we draw a picture of the sun, we paint it red). The white-

ness is a representative property of a cloud. If we assume that an adjective with -no has restrictive function, as we saw in the previous subsection, then it is not compatible with this context because we cannot restrict the referent, the sun, by defining it as red.

2.1.3 Idiomatic expression cannot be expressed by -no

If the indirect modification has the same reading as predicative adjectives, it cannot express the non-literal, idiomatic expression. This is because in the predication relation (A=B), adjectives are used in an absolute sense (Taylor 1992:1). This is true in the following Japanese examples.

(10)a. Taro-to Hanako-wa aka-i/*aka-no ito de musub-are-te-iru

Taro-and Hanako-top red/red-no string-with be bound together

‘Taro and Hanako are destined to be together.’

b. Kare-ni-wa kuro-i/*kuro-no uwasa-ga aru

he-to-top black/black-no rumor-nom be

‘There are dark rumors about him.’

c. Minna-ga kare-o siro-i/*siro-no me-de mi-ta

everyone-nom he-acc white/white-no eye-with looked

‘Everyone looked coldly on him.’

d. Kere-wa tooi-/*too-ku-no me-o shi-ta.

he-top distant/distant-no eye-acc did

‘He looked with vacant eyes.’

In (10), *red string, black rumor, white eye*, or *distant eye* are all idiomatic expressions in Japanese. If the form with -no assumes the indirect modification, as predicted, it does not match the non-literal, idiomatic expressions, as correctly observed by Cinque (2010). Note that, in relation to this, we observe that a nuance or variation of color cannot be expressed by the use of -no.

(11)a. aka-i/??aka-no kami no hito

red/red-no hair-gen person

‘a person of red hair’, ‘a redhead’

b. Taro-wa siro-i/??siro-no ha-o mise-ta

Taro-top white/white-no teeth-acc showed

‘Taro showed white teeth’

c. hi-ni yakete kuro-i/??kuro-no kao

sun-by get sunburned black/black-no face

‘a black face tanned by the sun’

As it can be seen in (11), *red in red hair or black in black face* does not represent literal colors, but reddish brown or tanned face. These examples also show that the adjectives with -no always represent a literal interpretation, and therefore, cannot express
the non-literal, idiomatic meaning.

In the next subsection, I will discuss the final interpretative difference.

2.1.4 More restrictive, identifying context prefers the form with -no

Recall that in the case of color adjectives both forms with and without -no are compatible with the restrictive meaning. In this subsection, we examine a more restrictive context, that is, a context of asking someone to get something, and passing it to the speaker. Unlike color adjectives, the adjectives of distance can appear only in -no forms (12b).

(12) a. Sokono aka-i/aka-no hon-(o) totte
     there red/red-no book-(acc) pass
     ‘Pass me the red book.’

b. Kimi-no *chika-i/chikaku-no hon-(o) totte
     you-gen near/near-no book-(acc) pass
     ‘Pass me the book near you.’

Therefore, in the case of the adjective of distance, the difference between with and without -no stands out more clearly in the restrictive meaning.

All these interpretative differences considered so far suggest that Japanese exhibits the difference between direct and indirect modification in the sense of Cinque (2010). The adnominal adjective with -no form can be considered as another realization of indirect modification with the restrictive, literal interpretation.

2.2 Identification problem: the status of -no form in Japanese

2.2.1 Ambiguous status of Japanese -no form

In this subsection, we consider the morphological and syntactic status of -no, and suggest that the -no form is one of the realizations of the Japanese classical copular verb nari.

First, we have to note that Japanese -no is one of the most controversial problems, and its distribution is much wider than that of 3 in English or the Chinese modifying marker de. As it is shown below, besides the case (or modifying) marker in the noun phrase (13), it has other functions like pronoun or complementizer of cleft sentence (14).

(13) a. Hanako-no hon  (genitive case marker)
     Hanako-gen book
     ‘Hanako’s book’

b. nihon-no kome-no seisan  (case marker of nominal argument)
     Japan-no rice-no production
     ‘the production of rice in Japan’

c. ame-no hi   (modifying marker of nominal adjunct)
     rain-no day
     ‘a rainy day’

(14)a. aka-i no (pronoun)
     red-red one
     ‘the red one’

b. Taroo-ga kat-ta-no wa kono hon da  (complementizer of cleft sentence)
     Taroo-no boug-tu-no top this book is
     ‘It is this book that Taro bought.’

Another well-known property of Japanese -no is that, because of its multiple functions, it appears recursively in noun phrases, as shown in (15).

(15) mura-no hazure-no ie-no yasai  batake-no daikon
     village-no edge-no house-no vegetable field-no radish
     ‘the radish harvested in the field of vegetables which is on the outskirts of the village’

With all these omnipresent characteristics of -no, and comparing with the Chinese modifying marker -de, Kitagawa and Ross (1972) proposed a universal rule governing modifier marker (Mod) insertion. In Japanese, the modifier marker is realized as -no, but as de in Chinese.

(16) Mod-Insertion Rule: [NP …XP Nα]→[NP…XP Mod Nα], where Mod = no/de

This rule inserts no/de after any constituent that is a sister of a projection of N.

However, it is also noted that there are differences in the contexts where de and no appear. For example, Chinese de can appear with relative clause, but the Japanese no cannot. For a detailed discussion, see Kitagawa and Ross (1982), and Saito et al. (2008).

4However, it is also noted that there are differences in the contexts where de and no appear. For example, Chinese de can appear with relative clause, but the Japanese no cannot. For a detailed discussion, see Kitagawa and Ross (1982), and Saito et al. (2008).
two Types of Modification and the Adnominal Modification in Japanese

Yurie Okami

Table 2. Inflectional paradigm of the copular verbs in Japanese

<table>
<thead>
<tr>
<th>full form</th>
<th>inflection</th>
<th>suspension</th>
<th>end of sentence</th>
<th>attributive</th>
<th>conditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>nari</td>
<td>-na, -no</td>
<td>-nari</td>
<td>-ndarō</td>
<td>-ndatta</td>
<td>-nda</td>
</tr>
</tbody>
</table>

In Table 2, the attributive and conditional forms of the verb nari are materialized as dependent forms (-na, -no) and are obligatorily connected to other forms. Because of this morphological dependency, and its homonymity with -no, we sometimes overlook the verbal status of -no. But as shown in (17), the attributive form of the copular verb nari can be manifested in the appositive constructions.

(17) a. [brother-no Hiroshi]      ‘my brother, Hiroshi’
    b. [actor-no Yamada]          ‘Mr. Yamada as an actor’

In these appositive examples, -no is a realization of an attributive form of the classical copular verb nari.

If -no is an attributive copular verb, and the adjective with -no is another example of indirect modification, we can propose the reduced relative clause IP in the structure of the adnominal modification with -no. I basically use the structure assumed in Cinque (2010). (18)

![Diagram](image)

Based on (18), I present the following structures of the adnominal modifications with and without -no.

(19) a. [DP [D [IP [PRO [XP [AP [aka-no taiyou]]]]]]]
    b. [DP [D [IP [aka-i taiyou]]]]

Following Saito et al. (2008), the relative clause and attributive adjective are nominal modifiers, and therefore they are adjuncts. This means that unlike the Chinese relative clauses with de or the English genitive case marker ’s that appear in [Spec, DP], they are merged as sister to the noun phrase. In the [Spec, IP] position of the relative clause, I propose pro co-indexed with the head noun, following Perlmutter (1972) and Murasugi (2000), who argue that Japanese allows empty pronouns in any but only argumental position.

Considering the structure of -no in (19a), I draw a generalization that besides a case marker and modifying marker, -no can be a realization of the copular verb nari, and function as predicate of a relative clause in the noun phrase for indirect modification. Following Cinque (2010) and Murasugi (2000), I assume that the category of the Japanese relative clause of the indirect modification is IP.

2.3 Explanatory problem of the distribution of -no

The third problem with -no is why some adjectives in Japanese have the alternation with and without -no. One of the reasons for this alternation is that Japanese is a strict head final language, and adjectives obligatorily precede the noun in the noun phrase. With this strict word order, we cannot distinguish direct and indirect modification interpretations based on the position of the adjective. In English or Romance languages like Spanish, it is possible to distinguish these interpretations with respect to the structural positions of adjectives.

(20) a. a navigable river
    b. a river navigable

(21) a. [un amigo viejo]      ‘an old friend’
    b. [un viejo amigo]       ‘a friend of long standing’

In Japanese, these differences must be expressed with different lexical items. However, in the case of some adjectives of color, distance, and shape, the different interpretations are linked to the morphological form with and without -no. In other words, with...
this alternation we can distinguish the interpretation morphologically.

Another tentative cause of this alternation is that Japanese does not have overt relative pronouns. In general, the surface structure of relative clause and of adjectival modification are exactly the same.

(22) a. [sp [sp, aka-i] hon]
   red book
   ‘a red book’
 b. [sp [sp, pro aka-i] C] hon]
    red book
    ‘a book which is red’

Thus, given the distinction of direct and indirect modification, the alternation with and without -no can be accounted for as follows: Japanese is a strict head final language and its relative pronoun is not overtly expressed. As a result, the interpretative differences of direct and indirect modification are usually distinguished with different lexical items. However, in the case of some adjectives (color, distance, and shape), the difference is realized as the form with and without -no.

But I have to emphasize that not all adjectives in Japanese have this alternation. Adjectives that have no alternation of forms, have to distinguish the meaning by the context in which they occur, but not by the -no form. It is beyond the scope of this paper to pursue a precise analysis of these adjectives without the alternation. However, as I have argued that lacking a positional difference of adjectives, the alternation with -no can be one of the measures used in Japanese to differentiate the direct and indirect modification.

In the next subsection, I will speculate on the theoretical implication of this analysis of the adnominal modification with -no.

2.4 Theoretical implication of the adjective with -no

The purpose of this subsection is to explore the theoretical implication of the analysis presented thus far.

In an adjective with -no form (19a), repeated here as (23a), I assumed a relative clause and pro in the subject position of that relative clause. Note that this pro is co-indexed with the head NP, but is not an NP trace. It is base generated as pro in the subject position of the relative clause. In the predicate position of the relative clause, -no appears as a conjugated form of the copular verb nari in Japanese. In (23b), the adjective is merged with NP as a modification in an adjunct position.

(23) a. aka-no taiyou
   [wp [wp, pro aka-i] [aka-taiyou]]

b. aka-i taiyou
   [wp [wp, aka-i] [aka-taiyou]]

The relative clause structure without movement in (23a) seems odd if we assume that Japanese has N-final relative clause in terms of Kayne (1994). Kayne proposes D-CP structure in the relative clause as a uniform base for both N-final and N-initial relative clauses (24a).

(24) a. [wp [wp, pro ... NP ...]]
   b. [wp [wp, NP, [C ...]]] (N-initial: English)
   c. [wp [wp, ... C tj ...]] (N-final: Chinese)
   d. [wp [wp, ... pro ...]] (N-final: Japanese)

In a case of N-initial relative clause like English, (24b) is derived from (24a) with a movement of head NP to [Spec, CP]. To derive a Chinese relative clause structure (24c), the relative clause requires one more step: a movement of TP to [Spec, DP]. Conversely, the structures presented in (24b–c) contrast with the Japanese relative clause structure (24d). As we have seen in 2.2., Japanese allows empty pronouns in any argumental positions, and therefore, we do not need to involve movement in its structure. Put it differently, Japanese relative clauses are pure sentential modifiers that are merged directly with NP in the specifier position of NP as adjunct.

Moreover, there are some phenomena that provide a further support for the absence of movement in Japanese relative clauses. For example, Kuroda (1976) presents a headless relative clause which consists of a truncated sentence with no gap, and a head noun it modified.

(25) Taro-wa [wp [wp, ringo-ga sara-no ue-ni atta] no]-o totta
   Taro-nom [ [apple-top plate on is] C] acc
   ‘Taro picked up an apple which was on a plate.’ (Kuroda 1976:270)

In (25), the relative clause is a full sentence without any gap, and the whole sentence is nominalized and marked with accusative case marker -o. This headless rela-
tive clause construction does not involve any gap or movement, but is fine as well as a headed relative clause in Japanese.

Other phenomenon that supports a non-movement analysis of Japanese relative clauses can be found in Kuno (1973) and in Hoji (1985), cited in Murasugi (2000). These examples indicate that Japanese exhibits neither the island effect (26) (Kuno 1973) nor the reconstruction effect (27) (Hoji 1985).

(26) [IP [DP [IP ei ej kiteiru] [NP yooohukuj]-ga yugoreteiru][sin]i]]

wearing suit -nom dirty-is gentleman

‘the gentleman who [the suit that he is wearing] is dirty’ (Murasugi 2000: 216)

If we assume that movement is necessary to form a relative clause, (26) should conflict with the complex NP constraint, but (26) is fully possible with respect to standard Japanese. Thus, if we assume non-movement analysis of Japanese relative clause, we can explain the grammaticality of (26). Similarly, Japanese does not exhibit the reconstruction effect.

In (27a), in English, the anaphor himself can be properly bound in the base position, thus we have a reconstruction effect. In other words, the head noun in the English relative clause undergoes movement to [Spec, DP]. In contrast, in Japanese example (27b) the effect of reconstruction is not present, because there is no movement.

(27)a. [IP [the picture of himself], [that John likes]]

b. ‘[IP [John-ga ej sukina] [NP zibuni-no syasin]]

John-nom like self-gen picture (Murasugi 2000: 217)

If all these analyses presented above are on the right track, as seems possible, then in Japanese, we do not need to assume any movement to form a relative clause, and the adjective with -no in the adnominal modification can be considered as another example of this kind of relative clause in Japanese. With the analysis of adnominal adjective with -no in Japanese, we have an implication that Japanese (headless and headed) relative clauses may not be relative clauses in the strict sense of Kayne (1994), but are closer to pure complex NPs without movement, as suggested in Hoji (1985), Murasugi (2000), among others.

3 Conclusion

In this paper, I discussed the Japanese adnominal modification with and without -no. We first observed that some adjectives in Japanese allows the alternation with and without -no, and argued that there are some interpretational differences between then. I then proposed that these interpretational differences can be explained if we assume a direct/indirect modification analysis in terms of Cinque (2010). In 2.2. and 2.3., I pointed out that -no is a realization of the Japanese classical copular verb nari, and proposed a rela-

tive clause structure for the adnominal modification with -no. I presented, in 2.4., a theoretical implication for the non-movement analysis of Japanese relative clauses on the basis of the headless relative clauses, the complex NP constraint and the reconstruction effect. These facts, along with the adnominal adjective with -no, constitute evidence of the non-movement analysis of Japanese relative clauses.

In conclusion, I hope that I have shown that the adnominal modification system of Japanese (adjectives with and without -no, relative clauses without movement, pure sentential modifier, etc.) is potentially a rich area for future research. However, the facts in this domain await further study.

References


A Three-way Distinction in Adjunct Control in Polish

JACEK WITKOŠ AND SYLWIUSZ ŻYCHLIŃSKI

This article discusses adjunct control in Polish with reference to two empirical domains of control, i.e., control into adverbial clauses and control into gerunds. As each of these two control domains exemplifies different syntactic characteristics, it is argued that control into adverbial clauses is a case of either Obligatory or Nonobligatory Control, depending on the optional placement of the logical operator in the lexical Complementizer (żeby [so-then] and its phonetic variants aby, hy), whereas control into gerunds instantiates a case of Obligatory Control. The correlation between the interpretation of PRO in these constructions and the passive, mediated by the smuggling movement of the passive constituent, is taken to be an interesting and novel diagnostic for the attachment site of a particular type of an adverbial domain.

Keywords: adjunct control, smuggling movement, attachment site, connected paths, logical operator

1 Introduction

The aim of this article is to discuss the nature of adjunct control. We work on the Polish database but our conclusions can be extended to adjunct control in English and other languages as well. We take adjunct control to cover cases of control in which the controller is placed in the (tensed) main clause and it controls the subject of an infinitive or gerund in an adverbial position. Specifically, we are concerned with the following spectrum of control cases1(although we cannot discuss all of them extensively):

(1) Characteristics of Adjunct Control in Polish:
   a. Obligatory Control in [P gerunds]
   b. Obligatory and Nonobligatory Control in [Lp gerunds] (adverbial clauses)
   c. Obligatory Control in participial clauses2

1 We are grateful to the GLiP 7 audience for their helpful critical comments on our oral presentation of this material.
2 We define Obligatory Control (= OC) (as in Hornstein 2001 and Landau 2000) as showing the following characteristics:
   (i) OC PRO must have an antecedent,
   (ii) the antecedent must be local,
   (iii) the antecedent must c-command the PRO,
   (iv) OC PRO only has the 'de se' interpretation,
   (v) OC PRO cannot have split antecedents,
   (vi) OC PRO only has the 'de se' interpretation

3 For lack of space we cannot discuss control into participial clauses, which is clearly a case of Obligatory Control:
   (i) [PRO wzrazić do domu], studenci, napoktali na pewne przeszkody.
   (ii) 'coming back home, students met upon certain obstacles.'

We leave this issue for further research but it seems that participial clauses seem to be attached very high in the structure of the main clause, higher than adverbial gerunds controlled by the subject (for a discussion of control into participial clauses in Polish see Witkoš et al. 2011; for a general discussion of participial clauses see, among others, Legendre and Akimowa 1993 and Landau 2010).

2 Control into [P gerunds]

Polish gerunds seem to always impose a strict Subject Control or strict Object Control interpretation, which leads us to assume that they instantiate Obligatory Control forced by distinct adjunct sites. We investigate in more detail three types of gerundive expressions:

(3) a. [łp bez gerund] Subject Control, adjunction at vP;
b. [łp za gerund] Object Control, adjunction at V';
c. [łp po gerund] Subject Control, Object Control, either site.

We do not, however, limit ourselves to considering typical examples of control in sentences in the active voice but we pair examples in both the active and the passive to check for the combined effect of the adjunct control type, related strictly to the attachment site of the gerund, and the movement operation in the passive which promotes to the clause initial position not only the object, but a larger unit of structure. Consider the following data, with (4), (5) and (6) matching the three types in (3a), (3b) and (3c), respectively:

4 For lack of space we cannot discuss the c-command requirement on PRO. Let us only observe that since Landau (2009) and Culicover and Jackendoff (2003, 2006) this requirement has been subject to considerable criticism. Yet, there seem to be only two genuine objections to the c-command requirement: cases of logophoric extension (i) and of control into subject extraposed infinitives with non-psychological predicates (ii):
   (i) It helped [Bety's career] [PRO to have an uncle in high places].
   (ii) [PRO to behave courteously at dinner] helped Bill, a lot.

Example (i) is orthogonal to the c-command debate, as it is treated as a case of extension of the index of the pursuer of the career to the whole DP in the interpretive component, so that [Bety's career] inherits the index of Bety. If so, the complex DP+DPs PRO under such semantics/pragmatic conditions at the relevant point in the representation.

Example (ii), which partly shares a representation with example (i), seems to be a genuine problem but even here Bill does c-command PRO in LF on two assumptions: in LF the infinitive is reconstructed to its vP-internal position in [Spec,CP] and the DP Bill is raised overtly to outer [Spec,vP]. Incidentally both of these assumptions are required in Landau (2009) for independent reasons.

5 Example (6c) is ambiguous in the manner consistent with (3c): when attached at the vP level it shows the Subject
(4) a. Szef, zwolnił swojego najlepszego pracownika [za PRO₁/₂ picie w pracy].
   b. Najlepszy pracownik, został poza boisko [po PRO₁/₂ pokoju].
   ‘The boss fired his best worker for drinking in work.’
   ‘The best worker was fired for drinking at work.’
(5) a. Szef, zwolnił swojego najlepszego pracownika [za PRO₁/₂ picie w pracy].
   b. Najlepszy pracownik, został poza boisko [po PRO₁/₂ pokoju].
   ‘The boss fired his best worker for drinking in work.’
   ‘The best worker was fired for drinking at work.’
(6) a. Sędzia, wysłał piłkarza, poza boisko [po PRO₁/₂ przebiegnięciu kilkunastu metrów].
   ‘The referee sent the player off after having run for several meters.’
   b. Piłkarz, został poza boisko [po PRO₁/₂ przebiegnięciu kilkunastu metrów].
   ‘The player was sent off after having run for several meters.’
   c. Brak, zagościł poza boisko [po PRO₁/₂ obejrzeniu 15 minut].
   ‘The goalkeeper was sent off after having watched his horrible performance with his back to the pitch.’

We take the most intriguing fact to be displayed in (5b); in the passive of Object Control PRO remains controlled by the object, although this does not seem to be a local phenomenon, with the implicit subject of the passive intervening between the two. Now, this is not a structural arrangement a syntactic theory of control would be ready to recognize, specifically in view of the minimal insensitivity on the part of the locality conditions such as Relativized Minimality or Minimal Link Condition.* Additionally, example (4b) shows that the implicit agent of the passive can be an active controller in the passive.

We propose to account for the interplay between control and the passive through the derivational interrelation between the adjunct site of the gerund and the amount of structural material promoted via smuggling in the operation of the passive. We postulate two adjunction sites for [PP gerund] adverbal expressions and movement out of adjuncts through connected paths (Kayne 1984, Manzini and Roussou 2000), analogous to the parasitic gap construction, where independent movement out of the adjunct is prohibited (cf. (7)), but a movement of the same nature linked up to a licit Wh-path is recovered (cf. (8)). The two movement paths must be arranged in such a way that the path from the adjunct should connect to the path running from the copy/trace position to the head position within the chain:

(7) a. *Która scenę, Piotr zniecwiadził film po obejrzeniu t₁?
   b. *Which scene did Peter hate the movie after seeing t₁?

Let us return to example (4a) and its representation in (9) below. The licit overt A-movement of the controller NP, licenses the movement of the element from inside the gerund through establishing a connected subtree (like in parasitic gap constructions in (8) above). In (4) and (9) the PP headed by bez is adjoined to vP, an area excluded from the c-command scope of the object, which facilitates unambiguous interpretation:

The movement of NP, to [Spec,TP] generates the following path: [vP– vP– T’–TP]. Given that the gerund is adjoined at the level of the vP, it is only upon the movement of the subject that the two connected subtrees are created. Once this has happened, a movement out of the gerund domain, which is an island otherwise, is possible. All this happens according to the Scopal Minimal Link Condition:

(9) TP
   NP
     T
       v
         vP
           [BEZ₁, PRO₁/₂ … ]

*Here we differ from Hornstein (2000), who proposes sideward movement (cf. Nacles 1999, 2001) instead of connectedness. However, sideward movement has been shown to be prone to overgeneration (cf. Landau 2008), we opt for the more conservative but proven option.
(10) Scopal MLC (after Manzini and Roussou 2000: 422):

Feature F attracts feature Fₐ only down to the next F' that also attracts Fₐ.

In order to deal with the passive construction in (4b) we resort to the analysis put forth in Collins (2005a). This analysis assumes the projection of the PartP, which is a participial phrase, and the VoiceP, which stores information about the passive, and we assume an additional functional projection FP, which facilitates feature checking of the implicit subject pro by the head of the VoiceP:

(11)

For the active voice version of the Object Control example with [PP za gerund] (cf. (5a)), we assume that the relevant adjunction site is at the V' level:

(12)

It is shown in (11) that NP₂, the implicit agentive pro subject, having moved to [Spec,FP], forms a connected subtree with the gerundive PP, which paves the way for the movement of PRO to NP₁. The Scopal Minimal Link Condition prevents the movement from the position indicated as PRO to NP₂, as it is the NP, which is derivationally closer to the element whose features it attracts and NP₂ does not form a connected path with the chain starting at PRO.

Collins (2005a) applies the tactics of 'smuggling' in his approach to the analysis of the passive construction, whose key elements are as follows:
(i) the subject of the passive is an empty category (PRO) in the position of [Spec,vP];
(ii) the preposition by lexicalizes the head of VoiceP and values the Null Case on PRO;
(iii) the constituent including the passive participle and the object DP ([PartP Part [VP V DPo]]) is moved to the position of [Spec,Voice] to avoid the intervention effect from the PRO subject for the movement of the DP object to [Spec,TP]:

\[\text{VoiceP} \quad \text{PartP Part [VP V DPo]} \quad \text{Voice-by [PRO V \ldots]}\]

In effect, the movement of the movement of PartP to Spec,VoiceP 'smuggles' the DP object around PRO to a position from which it is attractable by T. In our version of this analysis Collins’s implicit agentive PRO is pro.

For the active voice version of the Object Control example with [PP za gerund] (cf. (5a)), we assume that the relevant adjunction site is at the V' level:

(13)
In fact, the promotion of the PartP containing the gerund solves the intervention problem in control; the only local and accessible controller is the underlying object, whose path of A-movement runs next to the adjunct. In the Object Control cases the gerund is attached so low that it is carried as extra baggage within PartP in the smuggling step of the passive, hence control by the object is preserved. In the Subject Control cases the gerund is attached higher, outside PartP, so it remains within the c-command domain of the subject position in [Spec,vP] in the passive.\footnote{We need to address the problem of word order in the cases, where the Agent is not implicit but expressed lexically, for instance in (i) below:}

(i) Najlepszy pracownik został zwolniony przez szefa za [PRo1/*2 picie w pracy]  
best worker was fired by boss for drinking at work  
‘The best worker was fired by the boss for drinking at work.’

In order to account for this word order, we assume that the gerund is overtly extraposed, thus moved leftward under the antisymmetric approach (Kayne 1994 and Collins 2005a,b), to a position above vP but below FP in (13) above. This movement leaves a copy in VP. Next, the lexical Agent with the preposition cliticized onto it, is moved overtly to [Spec,FP]. At the next stage the passive operation promotes PartP to [Spec,VoiceP] and the derivation continues. Control by the object is obtained as before, but it affects the [PRo1/*2 gerund] in the copy, which although silent, is active in the derivation, as in Fox’s (2002) analysis of Antecedent Contained Deletion.

\section{Adverbial clauses}

Infinitival adverbial clauses in Polish are introduced by the lexical Complementizer \textit{żeby} [so-that] or its variants (\textit{aby, by}). At first glance it appears that adverbial clauses of manner and purpose allow for Obligatory (mainly) Subject Control and Object Control is strongly disfavored:

(15) Marek\textsuperscript{1} tak przewrócił Jurka\textsuperscript{2}, [żeby PRO\textsuperscript{1/*2} nie uczynić żadnego hałasu]  
Mark so knocked down George so that not make any noise  
‘Mark knocked down George in such a way as not to make any noise.’

(16) Jan\textsuperscript{1} wysłuchał Piotra\textsuperscript{2}, [PRO1/*2 aby mieć czyste sumienie]  
John heard Peter so that have clean conscience  
‘John heard out Peter to have a clean conscience.’

(17) a. Tamci ludzie\textsuperscript{1} spalili samochód\textsuperscript{2}, [żeby PRO\textsuperscript{1} wyłudzić odszkodowanie]  
those people burnt car so that obtain insurance  
‘Those people burnt the car so as to obtain insurance.’

b. Samochód\textsuperscript{2} został spalony przez\textsuperscript{1}, [CP żeby PRO\textsuperscript{1} wyłudzić odszkodowanie]  
car was burnt so that to obtain insurance  
‘The car was burnt so as to obtain insurance.’

Note that the pattern of the correspondence between the active and the passive in Subject Control in example (17a–b) is analogous to the pattern observed in (4a–b) above, for control into adverbial gerunds. On the one hand, the adverbial clause is attached high enough to allow for unambiguous control by the subject but on the other it is not smuggled via the promotion of PartP to VoiceP, as was the case above. So at first approximation the adverbial clause of purpose is attached below TP but above VP:

(18)

\begin{center}
\begin{tikzpicture}
  \node (TP) {TP};
  \node (VP) [below of=TP] {VP};
  \node (V) [below of=VP] {V};
  \node (NP1) [below of=V] {NP1};
  \node (T) [left of=NP1] {T};
  \node (vP) [left of=V] {vP [PRo1/*2 PRo1/*2]};
  \node (v) [below of=vP] {v};

  \draw [-] (TP) -- (VP);
  \draw [-] (VP) -- (V);
  \draw [-] (V) -- (v);
  \draw [-] (v) -- (vP);
  \draw [-] (vP) -- (T);
  \draw [-] (T) -- (NP1);

  \node at (2,0) {[PP po gerund]};
\end{tikzpicture}
\end{center}
However, the structure in (18) and the Subject Control mechanism does not explain all the interpretation possibilities for two reasons. First, it appears that Nonobligatory Control is also possible with adverbial clauses and second, under certain conditions indirect objects can also control into adverbial clauses of purpose.

We start with the first circumstance and present the following examples that justify our hesitation as to the exclusive Subject Control nature of adverbial clauses:

(19) Marek, poszedł, [żebę PRO₁ kupić mleko].
Mark went to buy milk 'Mark went out to buy milk.'

(20) Marek, zrobił to, [żebę PRO₁₂ go, podziwiać].
Mark did it to him admire 'Mark did that so as to be admired.'

In examples (20)–(21) Binding Theory considerations force PRO to be disjoint from the main clause subject, otherwise Principle B would be violated. It is of particular interest that the point of attachment of the adverbial clause is not a likely cause of the NOC reading in (20–21) above, as a comparison between (17b) and (21b) does not point to any legitimate difference. In the former, the implicit subject can control and c-commands it. We postulate that the difference between (20–21) and the other examples in this section point to any legitimate difference. In the former, the implicit subject can control and c-commands PRO, while in the latter it cannot control, though it probably c-commands it.

The special function of the Complementizer żebę [so-that] is confirmed by the fact that in its absence only OC readings are available, as observed in Bondaruk (2004: 221):

(21a) Jan₁ zwolnił kuzynkę₂, [żebę PRO₁₂₄₈₉ nie zarzucić mu₁ faworyzowania rodziny].
John fired cousin to not accuse him favoring family 'John fired his cousin so as not to be accused of favoring his family.'

b. Kuzynka₂, została zwolniona przez Jana₁, [żebę PRO₁₂₄₈₉ nie zarzucić mu₁ faworyzowania rodziny].
Cousin was fired by John so as not to be accused of favoring his family 'The cousin was fired by John so as not to be accused of favoring his family.'

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The interpretation of example (22a) is unambiguous: Philip is about to buy tickets. It is not so obvious in (22b), as another option emerges, whereby Philip's departure could only indirectly contribute to the purchase of tickets by somebody else. The difference between these two examples is lexically manifested through the presence of the lexical Complementizer.

In fact, this NOC/arbitrary reading-inducing function of żebę [so-that] is also found with infinitives in the complement position:

(23a) Marek, marzyl [żebę PRO₁ wezwać lekarza].
Mark, dreamt so-that call-INF doctor 'Mark dreamt of calling a doctor.'

b. Marek, marzyl [żebę PRO₁₂ wezwać mu₁ lekarza].
Mark dreamt so-that call-INF him doctor 'Mark dreamt of calling him a doctor.'

Consider the following situation: a group of Mark's friends is about to set off on a trip to town with a big shopping centre. Mark, who for some reason cannot join his friends on this trip, utters these words in a dreamy voice: Oh, how happy I would be if you, guys, were to buy me a new pair of shoes. Mark's utterance could be truthfully reported as:

(24) Marek, marzył [żebę PRO₁ kupić mu₁ nowe buty]
Mark dreamt so-that buy-INF him new shoes 'Mark dreamt of having new shoes bought.'

It appears that marzył [dream] patterns together with modlić się [pray], which allows for both OC and NOC:

(25a) Jan₁, modlił się [żebę PRO₁ zostać prezydentem]
John prayed reFl so-that become-INF president 'John prayed to become the president.'

b. Jan₁, modlił się [żebę PRO₁ nie robić mu₁ krzywdy]
John prayed reFl so-that not do-INF him harm 'John prayed not to be hurt.'

(26) Chłopcy, wiadzą, że Jan₁, modli się [żebę PRO₁₂₄₉₁₀ nie robić mu₁ krzywdy]
Boys know that John prays reFl so-that not do-INF him harm 'The boys know that Jan prays not to be harmed.'

In a stark contrast to examples (23)–(26) above, bare infinitives in the complement position do not allow for any arbitrary or Long Distance readings:

b. Filip₁ pojechał [żebę PRO₁₁ kupić bilety].
Philip went so-that buy tickets 'Philip went to buy tickets.'

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Boys know that John prays reFl so-that not do-INF him harm 'The boys know that Jan prays not to be harmed.'
The Complementizer 

(27)a. Piotr próbował [PRO, nagrać film na video] 
   Peter tried to record his film on video 
   ‘Peter tried to record a film on VCR.’

b. *Piotr próbował [PRO, nagrać mu film na video] 
   Peter tried to record him a film on video 
   ‘Peter tried to record him a film on his VCR.’

(28)a. Piotr obiecał Marii [PRO, nagrać jej film na video] 
   Peter promised Maria to record her film on video 
   ‘Peter promised Maria to record her a film on VCR.’

b. *Piotr obiecał Marii [PRO, nagrać mu film na video] 
   Peter promised Maria to record him a film on video 
   ‘Peter promised Maria to record him a film on his VCR.’

In order to formulate a generalization accommodating the observations on the role of the Complementizer, we turn to Manzini and Roussou (2000), where they investigate the role of the lexically filled CP area in control into interrogatives in English, and we postulate (29):

(29) The Complementizer żeby [so-that] is the site of an optional (generic/specific) operator.

The presence of the optional operator alters the locality aspect of the relations between PRO and its purported controller, as the operator is closer to PRO than the argument movement path on the main spine of the syntactic object under construction:

(30)

\[
\begin{array}{c}
\text{TP} \\
\text{NP}_1 \\
\text{T} \\
\text{vP} \\
\text{vP} [\text{NP}_2 \ldots \text{PRO} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots] \\
\text{v} \\
\text{vP} \\
\text{v} \\
\text{vP} \\
\text{NP}_2
\end{array}
\]

Following Manzini and Roussou (2000), we assume that the operator on C (żeby [so-that]) makes these arbitrary interpretations available.\(^7\) In their original approach this operator attracts a theta feature of the predicate. We replace the attraction of the theta feature with an Agree relation holding between the operator on C and the PRO (logophoric/pronominal) subject of the adverbial clause, whereby the PRO subject receives its generic interpretation. In fact, as proposed in Manzini and Roussou, the operator comes in two guises. It may be generic, in which case it leads to an arbitrary interpretation of the PRO subject in the adverbial clause, or it may take on a specific form, in which case it behaves logophorically in relation to a pragmatically prominent element in the context of the discourse, for instance the subject or object of the clause immediately preceding the sentence containing PRO, as in (26).

We believe that obtaining NOC interpretations through the presence of an optional operator on C fits well with the syntactocentric account of control, as the key elements of such an approach enumerated in (2) are observed.

Yet, there are also cases where a syntactically active element in the clause can-commanded by the subject functions as the controller, as the indirect object in the example below:\(^8\)

(31)a. Sześć pracowników, komórki, [żeby PRO, nagrać częściej zdawać mu relację z przebiegu pracy]

‘The boss bought his employees cell phones so that they could report to him more frequently.’

b. Pracownicy mieli kupione komórki przez szefa, [żeby PRO, nagrać częściej zdawać mu relację z przebiegu pracy] more often give him report from progress work

‘Employees were bought cellphones so that they could report to him more frequently.’

As in the other cases below, before the correspondence between the active and the passive equivalent of this example is quite telling. It shows to us that PRO is minimally c-commanded by the indirect object in the top position of its A-chain in (31a). Let us assume that the indirect object is first-merged inside the Applicative Phrase (in the position of [Spec,Appl]) and then raised for case checking to [Spec,FP]. The adverb clause also has two attachment sites: a high one at vP and a middle one at ApplP (but none at the low V’).\(^9\)

(i) I asked how (to behave)

As the authors admit, “if the same operator is present in the embedded context of (i)(j), we fully predict that it will license the arbitrary reading of the non-lexicalized argument of the embedded predicate, preempting control by the matrix subject” (Manzini and Roussou 2000: 438). Although the example (i) shows an operator on the embedded argument clause, let us observe that in Polish the same element żeby can introduce both argument clauses and adverbial clauses, so in all likelihood if it can appear on the Complementizer to the former of these clauses, it can also appear on the Complementizer to the latter.

\(^7\) Although Manzini and Roussou (2000) primarily locate the operator on the matrix C, they also leave open the possibility of the operator being on the embedded C, especially in the light of examples such as (i) (Manzini and Roussou’s example (68)).

\(^8\) The higher attachment site of the gerund at the vP level is not indicated to make (32) consistent with (33).

\(^9\) Without much discussion we take (31b) to be the passive equivalent of (31a). The use of the passive ‘copula’ mieć [have] is the only way in which the indirect object in Dative can be turned into a Nominative subject in a corresponding passive construction.
Thus once again the interplay between the attachment site of the adjunct and the size of the unit smuggled in the passive promotion is exploited to pinpoint a position where adjunction is made.

4 Conclusions

Control into adverbial clauses and gerunds does not follow the same pattern, which is shown in the examples used in the preceding sections. In this sense, Adjunct Control cannot be treated uniformly as a subcase of Obligatory Control (contra Hornstein 2001). We believe that control into adverbial clauses is a case of either Obligatory or Nonobligatory Control, depending on the optional placement of the logical operator in the lexical Complementizer (żeby [so-that] and its phonetic variants aby, by), whereas control into gerunds instantiates a case of Obligatory Control. We take the correlation between the interpretation of PRO in these constructions and the passive as an interesting and novel diagnostic for the attachment site of a particular type of an adverbial domain. We believe to have identified three such positions (from bottom to top): V’, ApplP and vP. We also believe to have confirmed the smuggling approach to the passive.

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(Syntax)–Semantics
Part Two

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The Multilayer Analysis of Prefixes in Polish

Adam Biały

The aim of this paper is to investigate the distribution of Polish verbal prefixes from the perspective of the more general division of Slavic prefixes into the lexical and the superlexical type (Pantcheva 2007, Romanova 2004, Svenonius 2004, et. al.). The paper questions a fixed linking of a particular prefix with one of the types, since there is quite a lot of syncretism of form between the two types of prefixes as well as corresponding prepositions. It is argued that the decisive role in the classification of prefixes is played by the aspectuality of the verb to which these are assigned. The overall interpretation is compositional and is a result of the delimitative function of the prefix and the aspectual entailment of the verb.

Keywords: prefixes, verbal aspect, perfectivity, syncretism

1 Introduction: lexical and superlexical prefixes

Verbal prefixes in Polish play similar functions to their equivalents in other Slavic languages. Hence an analysis of Polish prefixes can shed more light on the existing accounts of prefixes in Slavic. The question we would like to address in this paper is the status of the proposed classes of prefixes and their correlation with particular aspectual classes of verbs. It will be argued that it is the verb’s aspectuality that has a decisive role in determining the interpretation and classification of a given prefix.

1.1 Lexical and superlexical prefixes

Verbal prefixes have the ability to change the aspectuality of a given verb and set it as perfective.

(1) a. Tomek biegł do szkoły.
   Tomek-NOM run-PAST to school
   ‘Tomek was running to school.’

b. Tomek dobiegł do szkoły.
   Tomek-NOM do-run-PAST to school
   ‘Tomek reached school.’

c. Tomek wybiegł do szkoły.
   Tomek-NOM wy-run-PAST to school
   ‘Tomek used up the pen.’

The examples above illustrate two characteristics of verbal prefixes. They turn a given verb perfective and the event to which the verb relates telic. Quite a lot of the discussion on prefixes revolves around those two notions and the complexity of that discussion partially stems from the fact that these two notions tend to overlap. In many cases perfectivity entails telicity and it is associated with the presence of a result. The general rule seems to be that a perfective verb is always telic, but not every telic verb need be perfective (cf. Romanova 2009). We are going to take perfectivity to be a morphological characteristic which is linked with particular interpretation. The feature of telicity is going to be analysed as a more contextual one, as it results from the interpretation of the overall event (i.e., the verb and its complements).

(2) a. Tomek pisał list.
   Tomek-NOM write-PAST letter-ACC
   ‘Tomek wrote a letter.’

b. Tomek na-pisał list.
   Tomek na-write-PAST a letter
   ‘Tomek wrote a letter.’

c. Tomek wy-pisał długopis.
   Tomek-NOM wy-write-PAST pen-ACC
   ‘Tomek used up the pen.’

The examples above illustrate two characteristics of verbal prefixes. They turn a given verb perfective and the event to which the verb relates telic. Quite a lot of the discussion on prefixes revolves around those two notions and the complexity of that discussion partially stems from the fact that these two notions tend to overlap. In many cases perfectivity entails telicity and it is associated with the presence of a result. The general rule seems to be that a perfective verb is always telic, but not every telic verb need be perfective (cf. Romanova 2009). We are going to take perfectivity to be a morphological characteristic which is linked with particular interpretation. The feature of telicity is going to be analysed as a more contextual one, as it results from the interpretation of the overall event (i.e., the verb and its complements).

(3) Ramchand’s First Phase Syntax

The model that we are going to use for descriptive analysis is Ramchand’s (2003, 2008) First Phase Syntax. Ramchand’s model is essentially a semantic decomposition account of the structure of verbs which relates interpretation with syntactic projections in direct ways. What makes this model particularly suitable for the analysis of Slavic prefixes is the fact that it accounts for both the structural characteristics of prefixed verbs and the semantic effects associated with prefixation. The most important tenet of this model is that a given syntactic projection gives rise to specific interpretation, and
as a consequence, the presence of a given element of meaning is an indicator of specific syntax. The derivation of verbs is ordered hierarchically as indicated below.

The key projections are result, process and cause. The existence of these projections is associated with different types of verbs in terms of their eventuality. Activity verbs specify the Initiator role and the process projection. The result projection is licensed by achievement verbs, whereas accomplishment verbs require both the causing and the result projections.

Because of the fact that the addition of a prefix turns a given verb perfective and telic, it tends to be associated with the result projection (e.g., Ramchand 2008, Ramchand and Svenonius 2002). Ramchand and Svenonius (2002) postulate that the same type of derivation is responsible for Germanic verb particle constructions, where the particle originates inside an abstract prepositional phrase and raises to the res head position.

Because of the analogies that exist between verbal particles and verbal prefixes, the particle account is also proposed for Slavic verbal prefixes, a move which pushes the account towards a status of a universal feature.

(4) Alex handed her homework in: Alex handed in her homework.

1.2 Lexical prefixes

Following Romanova (2004), lexical prefixes are characterised by the following features.

Lexical prefixes:
— can attach to perfective or telic stems,
— are compatible with secondary imperfectives,
— cannot stack,
— do not measure over objects,
— can change the argument structure of the verb.

These features are associated with the position in which lexical prefixes are derived—a low position inside VP. In Ramchand’s (2008) model, this is the position of the result projection, hence the interpretation of a lexically prefixed verb is always resultative. An example from Russian is given below together with the proposed derivation.

(5) Boris vy-brosil soba-

All the features of lexical prefixes mentioned above may be associated with the ability of these prefixes to head the resultative projection. As a consequence, lexical prefixes are licensed either by verbs which already specify this projection or by verbs to which this projection can be added. With the former, there is no change in the eventuality type of the verb but a modification of the result state and induction of perfective aspect. When a lexical prefix introduces a result previously not licensed by the verb, the eventuality type of that verb changes.

1.3 Superlexical prefixes

The characteristics of superlexical prefixes are the following:

Superlexical prefixes:
— can attach to imperfective or atelic stems,
— are not compatible with secondary imperfectives,
can stack,
— can measure over events or objects,
— do not change the argument structure of the verb. (Romanova 2004)

These features are associated with the position in which superlexical prefixes are
derived – a high vP-external position. Superlexical prefixes share one characteristic
with lexical prefixes, namely they turn a given verb perfective and telic. However, in
this case the source of telicity is different, it is not induced by the result projection but
by the definitivitive function of the higher aspectual projection.

(6) Petja po-isk-a-l knigu polcasa/*za polcasa.
‘Peter PP-looked for a book for half an hour/*in half an hour.’

(7) Thus the key difference between lexical and superlexical prefixes is that the former
predicate over the result projection, whereas the latter, by being realised in the higher
aspectual projection, delimit the temporality of the verb.

2 Syncretism of prefixes

An additional important characteristic of prefixes is that they share syncretic forms with
prepositions. What is more, there is quite a lot of overlap between the two types of pre-
fixes themselves. As illustrated in (8), a single morphological form przez/prze- can be a
preposition (8a), a lexical prefix (8b), or a superlexical prefix (8c).

(8) a. przez ulicę [across the street]
Dzieci szły przez ulicę.
children-NOM go-PAST across street
‘The children were walking across the street.’
b. przejść przez ulicę/przejść ulicę [walk across the street]
Dzieci przeszły przez ulicę/ulicę.
children-NOM go-PERF.PAST across street/street-ACC
‘The children went across the street/crossed the street.’

The similarity between prefixes and their prepositional equivalents has been discussed
in the literature. Ramchand (2008: 139) observes that “the ‘lexical’ prefixes in Russian […]
bear closest resemblance to their unprefixed or prepositional counterparts (especially with
motion verbs).” The observation is made with respect to Russian, but Polish also makes use
of syncretism in the domain of P-elements. Ramchand also correlates the status of lexical
prefixes with that of Germanic particles, since by definition they realise the same type of
projection in the First Phase: “Most prefixes in Russian have a corresponding homophonous
prepositional form, but, like particles in Germanic, they seem to double as small-clause
predicates in close conjunction with a verbal meaning” (Ramchand 2008: 139).

As mentioned above, in Polish there is also quite a lot of overlap within the set of prepo-
sitional elements between lexical prefixes, superlexical prefixes and corresponding prepo-
sitions. There are two possible explanations of such a state of affairs. The syncretic elements
are either a result of homophony or polysemy. There are two indicators disfavouring the
homophony approach. First of all, as will be indicated below, the number of prefixes that show
such behaviour is extensive. Second of all, it would block a systematic account of prefixa-
tion and explanation of the productive usage of prefixes. The polysemy account circumvents
these obstacles and hence should be preferred. It is also in line with Ramchand’s (2008)
model and the neo-constructionist tradition, where the interpretation of any given element is
a combination of its lexical content and syntactic projection in which it is licensed.

What we are going to propose is that individual prefixes have constant semantics, i.e.,
constitute single lexical entries, but can be derived in more than one position in the deri-
vation, which leads to their different interpretations. A common tendency (e.g.,, Pantch-
evaw 2007, Ramchand 2008, Romanova 2004 and 2009, Svenonius 2004) is to associate
individual prefixes with a particular function, i.e., lexical or superlexical. Such informa-
tion would need to be associated with the lexical entry of a particular prefix. As a result,
the sets of lexical and superlexical prefixes would be fixed with a limited range of prefixes
that can serve that function. However, because of the fact that the syncretism of prefixes
in Polish is a widespread phenomenon with most prefixes being able to render the lexical
or superlexical interpretation in the right context, we need a more systematic account of
this process. That is not to say that any given prefix is ambiguous between the two inter-
pretations, since in a particular context, only one interpretation is possible. The differing
interpretations result from the different positions in which prefixes can be derived, which in turn is determined by the aspe{tual type of the verb to which they apply.

The syncretism of P-elements is quite often given a wider scope and it also includes prepositions. Matushansky (2002) argues that prepositions and prefixes constitute a single category P and have the same morpho-phonological status. The same approach is adopted by Markovskaya (2006) and Tolskaya (2007), who argue that the close relationship between lexical prefixes, super-lexical prefixes and corresponding prepositions must be a result of their common structural status.

From the theoretical perspective of neo-constructionist approaches, the differences in projection properties of prefixes and prepositions should be seen as a source of difference rather than similarity. The morpho-phonological similarity emphasized by Matushansky (2002) does not have to translate into syntactic identity. Since the position in the syntactic projection is associated with specific interpretation, two significantly different positions will give rise to two different interpretations. The interpretation of a lexical entry is compositional (Ramchand 2008) and it is a combination of inherent semantics and the syntactic projection in which the element appears. Hence, if there is a range of elements which can be associated with more than one syntactic position and this distribution is limited, then there must be some semantics that they share and which makes them suitable candidates.

To remind ourselves, it has been stated that lexical prefixes are licensed in the Result Phrase (RP) (low position) and superlexical prefixes are licensed in the AspP (high position) in the first phase. Prepositions which have influence on the aspe{tuality of the verb are licensed within the Result Phrase (low position). The different positions are indicated in (9) after Tolskaya (2007).

Some correspondence between the projections can be observed. The phrases in the low position (RP) and the high position (AspP) are subdivided into three layers. These roughly correlate to the division of the VP into the initial, process, and result. The analogy between event structure and path is highlighted by Pancheva (2007).

\begin{itemize}
  \item \textbf{(10) AspP: Inception, Duration, Completion}
  \textbf{VP: Init, Proc, Res}
  \textbf{PathP: FROM, VIA, TO (Source, Proc, Goal)}
\end{itemize}

\begin{itemize}
  \item \textbf{(11) Analogy between event structure and paths}
\end{itemize}

\begin{itemize}
  \item Despite the correlations, the crucial difference between lexical and superlexical prefixes must be kept in mind. Superlexical prefixes are temporal or purely perfectivizing and they measure over the whole event. Lexical prefixes, on the other hand, are spatial and they measure over Result Phrase (or PathP).
\end{itemize}

2.1 Syncretic lexical and superlexical prefixes

The syncretism of form among lexical and superlexical prefixes is quite widespread in Polish. The examples below illustrate it with three prefixes which are usually taken to be superlexical. However, in the examples below, the second example in each case takes a ‘lexical’ interpretation, in contrast to the superlexical interpretation of the first member. In (12) na- affects the argument structure of the verb. In (13), unlike the standard po- which measures over the event, it is purely perfectivizing. In (14) za- takes a spatial interpretation, which is associated with the lexical function.

\begin{itemize}
  \item \textbf{(12) na-}
  \textit{na-czytać się gazet\slash na-łóżyć sobie porcję ciasta}
  \textit{read a sufficient number of papers\slash help oneself to a piece of cake}*

  \item \textbf{(13) po-}
  \textit{po-czytać książkę\slash po-biec do szkoły}
  \textit{read a book\slash run to school}*

  \item \textbf{(14) za-}
  \textit{za-kończyć sprawę\slash za-biec komuś drogę}
  \textit{end a case\slash bar someone’s way}*
\end{itemize}
In (15), the reverse situation is presented. The spatial lexical wy- and o- are used with 'superlexical' distributive interpretation in the second example. The number of lexical prefixes which allow such cross-distribution is much smaller than that of their superlexical counterparts. This may be caused by the fact that they have richer semantic content, the meaning of which is spatial and hence more compatible with verbs of movement.

(15) wy-
wy-jechać z miasta/wy-plakać się (Distributive)
wy-drive-INF from town/wy-cry-INF refl
'drive out of town / cry on sb’s shoulder’
o-
o-biec stadion/ob-jeść się
o-run-INF stadium-ACC/o-eat-INF refl
'run round the stadium/eat a lot’

We would like to postulate that in Polish the syncretism of prefixes is not a marginal phenomenon, as most prefixes can be associated with either the low (lexical) or the high (superlexical) position. The only limitation is interpretability. Hence it seems to be more justified to focus on the structural context which licenses particular prefixes rather than their individual distribution. In that respect, prefixed forms would be part of the verbal paradigm and constitute perfective verb forms, with the additional meaning being a result of the idiosyncratic semantics associated with particular prefixes. On such an approach, prefixes are approaching the status of inflectional elements, a stand which is different from Filip (1999), who takes lexical prefixes to be derivational.

It seems to us that the right approach to explain the distribution of prefixes is to focus on the eventuality of the verb as the factor that determines the distribution of particular prefixes. Taken together with the general mechanisms of event augmentation, it is the aspectual type of the verb that determines the way in which it may be perfectivized and in that way limiting the set of prefixes which can serve that function. From the perspective of syntax, the common structurally relevant element of meaning is the delimiting function of prefixes; their lexical semantics seems to be of secondary importance. As a result, the combinations ‘prefix + verb’ are to be seen as instances of event compositionality.

The following sections focus on the interplay of eventuality types of verbs and prefixation. The points that will be emphasized are the following. Since most prefixes can be either lexical or superlexical, the restrictions on their distribution must stem from a broader structural context. The aspectual verb class seems to play the key role in determining the licensing of lexical and superlexical prefixes and it should be seen as a possible source of the restricted distribution of prefixes.

3 Verbal prefixes and lexical aspect

In the following sections it will be argued that the delimiting properties of the two types of prefixes are their common denominator. The restricted distribution of particular prefixes results from the structural characteristics of aspectual verb classes to which they apply and universal mechanisms of event augmentation. The key features of lexical and superlexical prefixes are their properties of attaching or specifying a resultative projection and of measuring out the event respectively. The first function is sensitive to the internal structure of the eventuality and the presence of a result phrase. The second one is temporal and is sensitive only to the nondelimited status of the eventuality.

3.1 Motion verbs

Most research on prefixes has been done in the context of motion verbs, e.g., Romanova (2004), Pantcheva (2007). It is mainly in the context of motion verbs that the uniformity between lexical prefixes and corresponding prepositions is proposed and they are said to form the category of P elements. This results from the fact that the function of prefixes with motion verbs overlaps with the function of spatial prepositions. What needs to be kept in mind, however, is that the overlap is not complete and it is still the prefix that has the key function of turning a motion verb perfective, an interpretation which is not possible with the PP itself.

Tolskaya (2007) claims that in Russian lexical prefixes are compatible with directed motion verbs but not with non-directed motion verbs. This is a result of the presence of a result phrase which is specified by Path with directed motion verbs and its lack with non-directed motion verbs. Hence, the domain of motion verbs is a viable test to distinguish the two types of prefixes. If we apply the test to Polish, the results are the same, as indicated in (16) and (17). In (16) the meaning supplied by the prefixes is perfective and spatial with quite a lot of overlap between the form of the prefix and that of the spatial preposition. In (17), on the other hand, the prefixes have a purely aspectual function. Similar type of correlation exists between the directional ići [go/awalk] and the non-directional chodzić [go/awalk]. The former gives rise to ‘lexical’ interpretations, whereas the latter combines with superlexical prefixes.

(16) biec [run towards] (Directional)
w-biec do pokoju/wy-biec z pokoju/ prze-biec przez ulicę/o-biec stadion/do-biec do szkoły
w-run-INF to room/wy-run-INF from room/prze-run-INF across street/o-run-INF stadium/do-run to school
‘run into the room/run out of the room/run across the street/run around the stadium/reach school’
(17) **biegać** [run] (Non-directional)

- *po-biegać*/*na-biegać* się
- *po-run-INF*/*na-run-INF* refl/*za-run-INF* refl
  
  ‘run a while/*run a lot/*run excessively’

(18) **jść** [go towards] (Directional)

- *prze-jść* most/*obe-jść* most/*pod-ejsć* pod most/*we-jść* do budynku/*wy-jść* z budynku
- *prze-go-INF* bridge/*ob-go-INF* bridge/*pod-go-INF* under bridge/*we-go-INF* in building/*wy-go-INF* from building
  
  ‘go across the bridge/*go around the bridge/*approach the bridge/*walk into the building/*walk out of the building’

(19) **chodzić** [go/walk] (Non-directional)

- *po-chodzić* po moscie/*na-chodzić* się/*pod-chodzić* pod budynek
- *po-walk-INF* on bridge/*na-walk-INF* refl/*pod-walk-INF* towards building
  
  ‘walk on the bridge for a while/*have a walk/approach the building’

The examples below illustrate that prefixes like *wy-*/*prze-*/*pod-*/*po-* are compatible with both types of verbs, serving the function of a lexical prefix with directed motion verbs and a superlexical prefix with non-directed motion verbs.

(20) *wy-jechać z parkingu*/*wy-jedzieć caly zbiornik paliwa*

- *wy-drive-INF* from car park/*wy-drive all tank of petrol
  
  ‘drive out of the car park/*burn the whole tank of petrol’

(21) *prze-jechać zjazd/prze-jedzieć caly kraj*

- *prze-drive-INF* turn/*prze-drive-INF* country
  
  ‘drive pass the turn/*drive throughout the whole country’

(22) *pod-ejsć pod most/pod-chodzić pod budynek*

- *pod-walk-INF* under bridge/*pod-walk-INF* close to the building
  
  ‘get under the bridge/approach the building’

(23) *pó-jść/po-chodzić*

- *po-go-INF*/*po-go-INF*
  
  ‘go somewhere /*take a walk’

Directed motion verbs usually require the presence of a directional PP, which specifies the Path phrase, and the lexical prefix is believed to predicate over it. Non-directional motion verbs bear a lot of resemblance to activity verbs, which we turn to in the following section.

### 3.2 Activity verbs

Activity verbs are generally not associated with a Path phrase nor a Result phrase. However, many allow event augmentation where the Result phrase can be added (which turns them into accomplishments). The added argument is the Theme licensed in the specifier position of the Result phrase.

The examples below indicate that the prefixes used with activity verbs (24) affect the argument structure of these verbs, which is a property of lexical prefixes, but the interpretation of these prefixes is non-spatial. It is only when the prefix is added that the verb can take an additional argument.

(24) **wy**- (lexical)

- *wy-pracować premię/*pracować premię*
  
  ‘earn an incentive’

- *wy-lieżeć chorobę/*lieżeć chorobę*
  
  ‘stay in bed through the illness’

- *wy-siedzieć jajo/*siedzieć jajo*
  
  ‘hatch an egg’

- *wy-stać bilet/*stać bilet*
  
  ‘to queue up for a ticket’

(25) **po,** **na,** **za** (superlexical)

- *po-pracować/*na-pracować się/*za-pracować się*
  
  ‘work for a while/*work a lot/*work excessively’

Superlexical prefixes do not affect the argument structure of activity verbs, but they do limit their temporal development, as in (25). From the perspective of prefixation, non-directed motion verbs reveal similar characteristics to activity verbs because they do not entail a result, the difference being that with motion verbs a change of categorial status leads to morphological changes mainly affecting the root vowel. Activity verbs are generally not associated with such a modification, and the addition of a result, which turns them into accomplishments is usually not associated with any change in their morphology. As a result, it is only interpretation and argument structure properties which set the status of a single lexical verb as an activity or accomplishment. Directed motion verbs, on the other hand, behave in similar ways to accomplishments, since the status of the Path phrase is similar to that of the Result phrase.
3.3 Accomplishments

When applied to accomplishment verbs, prefixes do not alter the argument structure of those verbs. Lexical accomplishments are transitive, and they license ResP; hence the prefixes have a purely perfectivizing function.

(26) udować dom/wy-budować dom (wy- lexical)
build-INF.IMPERF house/wy-build-INF.PERF house
‘build a house’

(27) pisać list/na-pisać list (na- superlexical)
write-INF.IMPERF letter/na-write-INF.PERF letter
‘write a letter’

(28) jeść kanapkę/z-jeść kanapkę
eat-INF.IMPERF sandwich/z-eat-INF.PERF sandwich
‘eat a sandwich’

(29) pić piwo/wy-pić piwo
drink-INF.IMPERF beer/wy-drink-INF.PERF beer
‘drink a beer’

The standard interpretation of a prefix with an accomplishment verb is temporal as it delimits the event. As the examples above indicate, this characteristic is common to all prefixes which appear with accomplishment verbs, irrespective of their proposed status. Hence the typically ‘lexical’ wy- receives a ‘superlexical’ interpretation.

3.4 Stative verbs

The general approach to stative verbs is that they do not develop in time, which in Ramchand’s (2008) model translates into the inability to license the Process phrase. Since stative verbs do not entail a process, they are not compatible with the Result phrase, even by event augmentation. The examples below indicate that prefixed stative verbs receive either inceptive or delimitative interpretation, which is the interpretation of superlexicals. As mentioned above, superlexical prefixes are not sensitive to the internal structure of the verb and they can be licensed as long as a verb is atelic.

(30) po-kochać/po-lubić/po-znać kogoś (Inceptive)
po-love-INF/po-like-INF/po-know-INF somebody
‘start to love/like/know somebody’

(31) po-być w samotności/po-istnieć/po-zostać (Delimitative)
po-be-INF in solitude/po-exist-INF/po-remain-INF
‘be in solitude/exist/remain for a while’

(32) do-trwać do końca prezentacji/wy-trwać w wierze (do-, wy- lexical)
do-remain-NR to end presentation/wy-remain-NR in faith
‘remain till the end of the presentation/remain in faith’

The examples in (30) have an inceptive interpretation with the prefix po- specifying the beginning of the state. In (31) the function of po- is delimitative. Interestingly the standard lexical prefixes wy- and do- also receive temporal interpretation. These examples further illustrate that it is the aspectual class of verb that determines the classification of a given prefix as ‘lexical’ or ‘superlexical’.

4 The semantics of prefixes: concluding remarks

In the sections above it was indicated that associating particular prefixes in Polish with lexical or superlexical status is not unproblematic. Polish prefixes do not seem to be constant with respect to their lexical or superlexical interpretation and can be associated with either in the right context. The polysemic nature of prefixes seems to stem from their general delimiting properties and the effect these have on the derivation in which the prefixes appear. Hence the key factor determining the interpretation of a particular prefix is the aspectuality of the verb to which it is attached and the syntactic projections with which this aspectual type is associated. In that respect, the limited lexical semantics of prefixes is of secondary importance to their distribution and structural interpretation. For example, a prefix like po-, which is generally taken to be superlexical (33), does not have this interpretation with verbs of directed motion like jechać [go towards], stative verbs like znać [know], and lexical accomplishments like łamać [break].

(33) po-: [for a while] (Delimitative)
po-biegać/po-czytać
po-run-INF/po-read-INF
‘run for a while/read for a while’

(34) po-: lexical (Resultative)
po-jechać/po-znać/po-smarować/po-łamać
po-drive-INF/po-know-INF/po-butter/po-break-INF
‘drive somewhere/get to know/butter/break up’

(35) wisieć/wieszać [hang]
po-wisieć (Delimitative)/po-wiesić coś
po-hang-INF/po-hang-INF sth
‘hang for a while/hang sth up’
(36) leżeć/łożyć [lie/lay]
   po-leżeć (Delimitative)/po-łożyć coś
   po-lie-/po-lay-Inf sth
   ‘lie for a while/lay sth down’

What it indicates is that the attested combinations are restricted by the eventuality of the verb rather than by the lexical content of the prefixes themselves. The prefixes are semantically bleached and their contribution to the interpretation is delimitative. The interpretation of the overall derivation is compositional and results from the aspectuality of the verb and the prefix’s delimitative function.

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Tolskaya, I. (2007), Unifying Prepositions and Prefixes in Russian: Conceptual structure versus syntax, [in:] M. Basic, M. Pantcheva, M. Son, and P. Svenonius (eds.) Nordlyd,
Falling Between the Chairs: Are Classifying Adjective + Noun Complexes Lexical or Syntactic Formations?

Bożena Cetnarowska and Helen Trugman

The present article considers the status of classifying adjectives (CAs) in Polish with respect to morphological, syntactic and semantic typologies, focusing on the semantic classification of adjectives proposed in Partee (2007, 2010). A new typology of CAs is provided, in which they form a continuum of modifiers in noun phrases ranging from lexical idioms to free syntactic constructions. We show that this continuum of CAs cuts across all adjective types identified by Partee (ibid.), rather than forms one discrete class of modifiers. It also neatly correlates with the three types of N-CA combinations suggested in Cetnarowska, Pysz and Trugman (2011, in press). The proposal is validated by a series of syntactic tests.

Keywords: classifying adjectives, intersectivity vs. subsectivity, migrating CAs, tight units, idiomatic CAs, lexical vs. syntactic derivation

1 Introduction

This paper aims at clarifying the status of nominal phrases hosting classifying adjectives (CAs) in Polish with respect to their being products of lexical versus syntactic derivations. The term ‘classifying’ is often used in traditional literature in contradistinction to the term ‘qualifying’, with CAs restricting the denotation of the noun they modify, and qualifying adjectives (QAs) describing a non-defining feature of the head noun (e.g., Warren 1984). This distinction has also been referred to as specifying versus characterizing modifiers in Tabakowska (2007), or associative adjectives versus attributive ones in Giegerich (2005), among others. We will be using the term ‘classifying’ to refer to this vast and heterogeneous class of noun modifiers.

The paper is structured as follows: in section 2 we demonstrate that CAs do not neatly fit many existing classifications of adjectives; in section 3, we discuss semantic properties of CAs and propose that the three different ways in which they combine with N align with the three adjectival types proposed in recent works by Partee (2007, 2010); section 4 provides syntactic tests that support our semantic analysis, thus validating the present proposal.

2 Falling between the chairs – problems with various adjective classifications

Classifying modifiers seem to defy various adjective classifications proposed in literature, by not strictly conforming to the criteria proposed for different adjectival classes.

First, it appears that CAs cannot be neatly classified according to their morphological make-up. Whereas the majority of CAs are relational adjectives (1a) (also known as (de)nominal or substantive adjectives), some primary (non-derived) adjectives may acquire a classifying interpretation, as well as those derived from participles or PPs, as shown in (1b) and (1c):

(1) a. Relational: sportowy [sport-adj] (sportowy samochód [a sports car]); kulturalny [cultural] (olimpiada kulturalna [cultural Olympic games]),
   b. Primary: nagi [naked] (rudbeaka naga [thimbleweed]); krzywy [curved] (linia krzywa [a curved line]); wielki [big, giant] (panda wielka [a giant panda]),
   c. Derived from participles and PPs: utwardzony [hydrogenated] (utwierdzenie [hardening] oil); śpiewający [singing] (śpiewkicki śpiewającie [song birds]); międzywojennej [interwar] (literatura międzywojennej [interwar literature]).

Some researchers proposed an adjective taxonomy based on their thematic relation with the modified noun. For instance, Bosque and Piccallo’s (1996) classification distinguishes between classificatory, i.e., non-thematic, and thematic modifiers of N in Spanish. Thus, the CA pasażerskie in (2a) counts as a thematic modifier since it is taken to hold the same thematic relation with N as an object of the underlying verbal base przewozić [to transport]. On the other hand, its counterpart in (2b) is taken to be a classificatory modifier devoid of any thematic relation with the nominal head.

(2) thematic CA classification (non-thematic) CA
   a. przewozy pasażerskie transport passenger-adj
   b. samoloty pasażerskie planes passenger-adj
   ‘passenger transportation’ ‘passenger planes’

Although the thematic relationship between the adjective and the noun head might be distinct in the two cases due to the derived/non-derived nature of the noun, we believe that in both NPs the adjective serves the same semantic function and, thus, can be analyzed as a CA denoting the type of an airplane or transportation. Likewise, Giegerich (2005: 579) observes that associative adjectives in English, such as feline behavior, dental decay “may express an argument-predicate structure inherited from a predicate contained in the noun; or they may express the less structured relationship of “associated with,” “to do with” (which is then often augmented by encyclopedic knowledge on the speaker’s part).” Consequently, CAs cannot be uniformly assigned either to thematic or classificatory modifiers.

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In our earlier work (Cetnarowska, Pysz, and Trugman 2010a, b), we showed that Polish CAs do not align either with direct or indirect modifier classes proposed in Cinque (2010). Specifically, they challenge the following major claims of Cinque’s movement theory.

CAs of all morphological types in (1) cannot be phrasal modifiers since they fail such adjectival tests as gradability, as in (3), adverbial modification, as in (4), or ability to take complements/adjuncts, as in (5):

(3) a. *pancerńik mniejszy
   armadillo smaller

b. *skoczek [bardziej narcyśliw]
   jumper more ski-ad

(4) a. *film [racej niemy]
   movie rather silent

b. *ptaki [pięknie śpiewające]
   birds beautifully singing

(5) a. *pancerńik [mały z niedożywienia]
   armadillo small from underfeeding

b. *drukarka [kolorowa od tuszu]
   printer color-ad from ink

Even though CAs might exhibit relative freedom of placement within the NP (6a,b), they cannot originate as relative clauses (RCs), since many of them are non-RC-expandable (6c,d) (the examples in (6) are (31) from CP&T 2010b).

(6) a. mundur myśliwski galowy
   uniform hunter-ad parade-ad uniform parade-ad hunter-ad
   ‘a hunter’s parade uniform’

b. mundur galowy myśliwski
   uniform hunter-ad parade-ad uniform parade-ad hunter-ad
   ‘a hunter’s uniform which is for parades’

c. *mundur myśliwski, który jest galowy
   ‘a hunter’s uniform which is for parades’

d. *mundur galowy, który jest myśliwski
   ‘a parade uniform which is that of a hunter’

All possible word orders of CAs cannot be derived via phrasal movement within a fixed hierarchy of functional heads but require heavy pragmatic and Information Structure support, which makes dubious the need for movement derivation of their placement.3

There have been attempts at providing a uniform analysis of Polish adjective classes based on the unique structural position within the nominal projection where CAs are merged, such as Rutkowski and Progovac (2005), or Rutkowski (2007). In this approach, classifying interpretation is linked to a unique postnominal (postN) position within Polish NPs; and any adjective can acquire either classifying or qualifying interpretation depending on its place of merge within the nominal projection (see Punske 2011 for a similar proposal). The postnominal position of CAs is achieved after N moves out of NP to the higher Classificatory projection.

5, 6

Additionally, it is invalided empirically by Polish CAs that often alternate between preN and postN positions (7); as well as by TypePPs, as shown in (9) (see CP&T 2010b, 2011 for more discussion).

(7) a. nocny dyżur
   night-ad duty

b. naftowa lampa
   oil-ad lamp

(a’. dyżur nocny b’. lampa naftowa
duty night-ad lamp oil-ad
cited after CP&T 2011, (43))

(8) a. drukarka atramentowa
   printer inkjet-ad

b. kolorowa
   color-ad

‘a color ink-jet printer’

(9) a. neolityczne narzędzie
   Neolithic-ad tool

b. męski płyn
   male fluid after shaving

‘a Neolithic work tool’

CA-N-CA

‘a men’s aftershave’

CAs also appear to fall between the chairs with respect to the semantic classification of adjectives found in Partee (2007, 2010). On one hand, they are not intersective, which is supported by the invalid inference pattern in (10), and by the lack of contradiction in (11):

(10) **Premise:** Lou Shen to panna wielka. ‘Lou Shen is a giant panda.’

**Premise:** Lou Shen to ssak. ‘Lou Shen is a mammal.’

**Conclusion:** Lou Shen to wielki ssak. ‘Lou Shen is a giant mammal.’ invalid

(11) Łabędź niemy nie jest zawsze niemy.
    swan mute not is always mute
    ‘The mute swan is not always mute.’

Thus, it seems that CAs are better analyzed as non-intersective subsective (following the new classification of adjectives by Partee (ibid.), shown in (12a)).4 As such, they are – preN, one is forced to further assume the optimality of overt No-Class movement. This claim seems rather stipulative since there is no well defined trigger for N movement besides a need to derive the postnominal position of CAs. Additionally, it is invalided empirically by Polish CAs that often alternate between preN and postN positions (see examples in (7) and (8)).

4 With respect to the meaning postulates, one can make a three-class scale, from interactive (the most restricted) to subsective to unrestricted (not-necessarily-subsective). The interactive adjectives are a subset of the subsective adjectives, which are in turn a subset of the unrestricted set, i.e. of the set of all adjectives.” (Partee 2007, fn. 3)

5 For lack of space, we cannot present our claims in detail here and refer the interested reader to CP&T (2010a, b) for more discussion and illustration.

6 This movement is open for parameterization across languages – while in Polish it is claimed to be overt, in Serbian it is taken to be covert. If one considers Romance languages, where some types of CAs appear postN, while others in press) that this syntactic approach to CAs suffers from several empirical and conceptual problems and presents a very one-sided picture of CAs. Specifically, it is challenged by ‘migrating’ CAs (in our terminology) occupying a prenominal (preN) position (7); as well as by multiple CAs hosted by the same NP, as in (8). Moreover, the postnominal position is not always reserved for CAs and can be filled by other classifying modifiers, such as TypeGens or TypePPs, as shown in (9) (see CP&T 2010b, 2011 for more discussion).
supposed to comply with the meaning postulate in (12b) (from Partee 2010, (3)), which seems to hold:

(12) a. Subsectivity: ||skillful N|| ⊆ ||N||
||panda wielka|| ⊆ ||panda||
||panda giant || ⊆ ||panda||

However, if we try to apply another test for subsectivity from Siegel (1976) – the as-phrase test that distinguishes subsective adjectives from (vague) intersective ones – we see that it does not work well for CAs:

(13) a. *Lou Shen jest wielka jako panda, ale nie jako zwierzę.
‘Lou Shen is big as a panda, but not as an animal.’

b. *Ten łabędź jest niemy jako łabędź, ale nie jako ptak.
‘This swan is mute as a swan but not as a bird.’

Consequently, CAs seem to exhibit some but not all features of subsective adjectives either, thus again falling between the chairs – being neither intersective proper nor subsective proper.

To sum up this section, we have shown that CAs in Polish form a heterogeneous class of nominal modifiers that do not neatly fit any of the proposed taxonomies of adjectival types. Therefore, there is a need for a new classification, or at least a refinement of the existent one(s), which will be able to accommodate particular properties of CAs in a comprehensible way. To this end, in section 3, we are going to address semantic properties of distinct CA types vis-à-vis the adjective classification in (12a), and propose a new taxonomy of the three subclasses of CAs identified in our previous works.

3 Adjectival classes and the place of CAs in the adjective ontology

We will start with a few general observations about CAs. First, in contrast to Punske (2011), we take CAs to be individual-level adjectives exclusively (see Carlson 1977 for the discussion of stage- and individual-level modifiers).

(14) a. łabędź niemy/*oniemiały
b. rudbekia naga/*obnażona

swan mute-Adj/*got-mute
rudbeckia naked/*unclad

‘a mute swan’
‘thimbleweed’

Moreover, contra Punske (2011: 234), we do not consider all CAs as lacking meaning postulates altogether, and, hence, being neither subsective nor intersective, confined to the unrestricted set in (12a). We also argued (CP&T 2011: 290–291) that adjectives exhibit certain ordering restrictions that may stem from the semantic hierarchy (cf. Cinque 1994, Scott 2002, Perelsvaig 2007, among many others). In other words, modifiers belonging to the lower levels of the hierarchy are usually merged closer to the head noun and precede higher-level modifiers:

(15) a. SUBJECTIVE + SIZE + MATERIAL + NOUN HEAD
b. piękna duża dębowa szafa odzieżowa

SUBJECTIVE + SIZE + MATERIAL + NOUN HEAD + TYPING ATTRIBUTE

‘a beautiful big wooden wardrobe for clothes’

We assume here that CAs can belong to any semantic class below SUBJECTIVE COMMENT. This allows for some adjective polysemy – with one and the same adjective being analyzed as belonging to several categories in the above hierarchy due to its distinct interpretation. For instance, a SIZE adjective wielka [giant] is analyzed as a TYPING ATTRIBUTE when applied to the natural kind ‘panda’ in panda wielka. Yet, the same adjective wielka can indicate the actual size of an object, as in the phrase wielka panda wielka [a big giant panda], and can classify an object according to its size (in addition, wielka can be analyzed as a QA of SUBJECTIVE COMMENT, when the modifier does not classify but simply reflects the speaker’s evaluation of the object’s size). It appears that adjectives of almost any level of the hierarchy can have a counterpart in the TYPING ATTRIBUTE category. For instance, the adjective francuski [French] in francuski kucharz [French cook] functions as a NATIONALITY/ ORIGIN modifier, whereas in the expression ciasto francuskie (lit. dough French) [puff pastry] the same adjective functions as a TYPING ATTRIBUTE.

In the following section we present the three subclasses of CAs identified in our previous works.

8This phenomenon is not new and such polysemous adjectives have been discussed already in Siegel (1976) and Warren (1984) for English and Willim (2000), Rutkowski and Progovac (2005) for Polish, among others.
earlier works and discuss their contributions to the meaning of the head noun and entailments they produce. This will allow us to align CAs subclasses with the modified adjective ontology proposed by Barbara Partee in her recent works (Partee 2007, 2010).

### 3.1 Former classification of CAs (CP&T 2011, In press)

In our earlier works, we examined CAs in several types of nominal constructions and proposed different modes of N-CA combinations, adopting for this purpose the theory of Denis Bouchard (2002 and later works). Leaving the details of the semantic analysis aside, we distinguished between three subclasses of CAs:

1. CAs in ‘tight units’: \[s_{CA}, N, C A [C A]\]
2. ‘migrating’ CAs: \[s_{CA}, N [N (C A / T y p e G e n P / T y p e P P )]+ N u m]\]
3. CAs in lexical idioms: \[s_{CA}, C A - N\]

CAs merged with N in postnominal position have been assumed to form ‘tight units’, with the N-CA combination being analyzed as a complex N-Adj property (<e,t>) defining a natural class/ kind in each possible world. In other words, the extension of the N-CA combination is defined by the two properties, those of N and CA, simultaneously, and the property of CA is dependent upon the property of N (cf. the adjective’s interpretation in ‘an electric engineer’ with ‘an electric pan’).

CAs that can merge with N either in post- or prenominal position were called ‘migrating’. When occurring prenominally, such CAs exhibit the behavior similar to that of qualifying adjectives, exhibiting less interpretational dependency upon the noun’s meaning. Or in other words, the meaning of the modified NP demonstrates a higher degree of compositional entailment than in ‘tight units’ and requires less encyclopedic knowledge on the part of the speaker.

The last category is presented by CAs merged with N in prenominal position in lexical idioms, such as czarny rynek [black market], lwia paszcza [snagdragon], łabędzi śpiew [swan’s song], krokodylę łzy [crocodile tears], niebieski ptak [lit. blue bird] [loaf-er, sponger]. These CAs form non-compositional compounds with their nominal heads and are, thus, considered inseparable from their N heads. Such CAs get interpreted together with their Ns and require substantial encyclopedic knowledge for interpretation. We will refer to them as ‘idiomatic’ CAs for the simplicity of presentation.

### 3.2 Classifying CAs with respect to subsectivity/intersectivity and entailment

Now we examine the placement of CAs in the ontology of adjectives proposed by Partee (2007, 2010). First, we take N-CA combinations in ‘tight units’ to form taxonomic hierarchies, in which the CA participates in partitioning the set denoted by the noun into mutually exclusive/non-overlapping subsets, as shown in (17a) – the set of individuals representing the kind panda is subdivided into two subsets with the help of modification, each denoting a separate taxonomic subkind of panda – red panda vs. giant panda. Both subsets are mutually exclusive since no panda can simultaneously belong to both species. Such partitioning creates a contrast set, without which taxonomies cannot exist (cf. Kay 1971, as cited in Dayal 2004). We propose that the interpretation of ‘tight units’, i.e., taxonomic kinds, requires from the user knowledge of existing taxonomies, lack of which impedes their interpretation in a non-vacuous manner (and thus fails the Non-Vacuity Principle of Kamp and Partee 1983). In other words, CAs in ‘tight units’ cannot always automatically create the negative extension of the N-Adj combination by simply negating the property expressed by the adjective modifying N, particularly when the meaning of a CA is heavily contingent upon that of N. Explicit taxonomies provide both the positive and negative extension of the N-CA combination: e.g., African vs. Asian, bush vs. forest elephants, and allow for proper interpretation.

In addition, it is often the case that the taxonomic kind property that holds of the whole kind does not necessarily hold of an individual member of this kind. In other words, many CAs participating in ‘tight units’ are non-entailing. For instance, not any individual giant panda is supposed to be giant. A newborn giant panda counts as giant even if it is several centimeters long. In contrast, a statue cannot be called giant when it is only several centimeters high (glossing over the complications with vague intersective adjectives). Such non-entailing CAs are better analyzed as subsective proper, and, hence, they comply with the subsectivity postulate, as was shown in (10) above.

In contrast, CAs in lexical idioms do not form taxonomies at all, and do not presuppose a contrast set. A non-compositional idiom is a lexical item, where N and Adj are inseparable and Adj does not modify the noun predicate, but changes its characterizing function, i.e., its core meaning and, thus, is a part of that predicate not a separate one. Consequently, whereas a giant panda is recognized as a counterpart of red panda in the panda taxonomy, boża królika, as in (19), does not have any counterparts distinguished from it by a single property denoted by the CA. The encyclopedic knowledge of language

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11Kaye (2004, In 38) writes that “Kay 1971 argues that an entity qualifies as a subkind iff it belongs in a contrast set. That is, for x to be a taxonomic entity, there must be a yx and a zy, such that x and y can be considered subkinds of z.”

12Non-Vacuity Principle (NVP) states: “In any context, interpret any predicate so that both its positive and negative extension are non-empty.” This principle applies both to simple predicates and to predicates formed by combination of an adjective and a noun: “these should be interpreted in such a way that the ADJ-N combination is a non-vacuous predicate.”

13Certainly, there exist taxonomies that are more transparent than others and the property of the taxonomic kind is entailed by each individual of that kind. Such CAs allow for the creation of the negative extension of N-CA by plain negation of the adjective property, as in przewozy lotnicze pasażerskie, lit. transport aerial passenger—non [passenger air transportation]. One does not need to know that passenger transportation stands in contrast to freight transportation in order to interpret the adjective in a non-vacuous manner. Such adjectives exhibit properties of intersective-subsective modifiers (the most restricted set in (12a)) and seem to comply with both meaning postulates.
users helps them to interpret the idiom in a non-vacuous way by contrasting the positive extension of the predicate boża krówka with its negative extension – i.e., any bug which is not a ladybird.

With ‘migrating’ CAs, we get transparent classifications that do not require encyclopedic knowledge. The Non-Vacuity Principle is satisfied by the same principle as with other intersective adjectives – by negating the property of the adjective. A yellow car is interpreted as contrasting to cars of all other colors. Similarly, naftowa lampa is opposed to lamps using all other kinds of fuel. Attributing the quality to a noun immediately creates positive and negative extension of the N+Adj combination by simple inference. Therefore, we believe that such CAs are better analyzed as intersective-subjective adjectives (the most restricted set in (12a)), which is supported by their validity with both postulates: an oil lamp is a lamp, hence oil is a subjective modifier. At the same time, an oil lamp is also an oil lighting device, which makes it a valid intersective modifier. Clearly, such intersective CAs are necessarily entailing since in order to count as an oil lamp it must use oil as its fuel, i.e. the kind property must be entailed by each individual of the taxonomic kind. The proposed classification of N-CA combinations is schematically represented in (17), and their placement in the adjective ontology by Partee (from Partee 2007: 153, fn. 3) is given in (18).

(17) a. **Tight-unit CAs**
   - subjective
   - Red
   - pen

   b. **‘Migrating’ CAs**
   - intersective
   - Red
   - pen

   c. **Idiomatic CAs**
   - neither

(18) **Three subclasses of Classifying Adjectives**

As we can see from the diagram in (18), ‘migrating’ CAs fall into the A category, ‘tight unit’ CAs – into the B category, and idiomatic CAs comprise the C category, which correspond respectively to intersective-subjective, subjective proper and un-

restricted adjectives. This shows that CAs do not form a discrete class of adjectival modifiers, as has been often assumed in literature, but rather form a continuum, with idiomatic non-compositional CAs demarcating it at one end and fully (or nearly fully) compositional ‘migrating’ CAs – at the other. We take this continuum to also reflect the level of adjective merge with N: while N-CA idioms are formed in the lexicon, which fully predetermines their behavior, ‘migrating’ CAs are better analyzed as free syntactic combinations of nouns and modifiers derived by the intersection of two predicates. ‘Tight unit’ CAs, on the other hand, constitute an intermediate type, with a modifier being more dependent on N, often being non-entailing for individual members of the kind and requiring more encyclopedic knowledge on the part of the language user, yet exhibiting some features of a syntactic phrase in a proper environment (see section 3). This analysis of Polish CAs finds some cross-linguistic support in Giegerich (2005), who observes that English NPs consisting of associative adjectives and nouns “straddle the syntax-lexicon divide”. He suggests treating urban policeman and medical appointment as syntactic phrases (since the head noun can be replaced here by the pro-form one), while criminal lawyer and Foreign Office are analyzed as lexical units.

### 4 Syntactic behavior of CAs as reflecting their distinct semantics

Polish CAs falling into several subclasses with distinct semantic properties are predicted to exhibit distinct syntactic behavior due to the different ways of merge with N in each particular case. On the other hand, since it is a continuum rather than a set of separate categories, we also expect some CAs to exhibit mixed behavior. Specifically, it is predicted that ‘tight unit’ CAs will exhibit both properties of lexical compounds and syntactic phrases. To check these predictions and thus substantiate our classification in (18), we will examine now the behavior of various CAs in a series of syntactic environments.

First, we will explore their predicative use, which is a stumbling block for most theories of adjectival classes (Bouchard 2002, McNally and Boleda 2004, Cinque 2010, among many others). For this purpose, we will look at primary and secondary predication, as well as expansion to Relative Clauses, which is also a highly controversial topic for Polish CAs (see Rutkowski and Progovac 2005, CP&T 2010 and 2011 in press and references cited there for details). Second, we will present new data on various scrambling phenomena, such as adjectival splits triggered by either contrastive focus or topic, which will support our claim that ‘tight unit’ CAs form taxonomies that require encyclopedic knowledge and, hence, more contextual support to be licensed in such constructions.

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13The fact that some ‘tight unit’ CAs can also be entailing and intersective, as mentioned in fn. 12 only further supports our claim that we deal with a continuum where one subclass may overlap with the other. This overlap may also be attested at the border between idiomatic and ‘tight unit’ CAs with such idioms as black market and grey market, which do seem to form a taxonomy with fully idiomatic expressions. Analogously, a blackberry and a blueberry may be considered taxonomic counterparts, while being lexical compounds.
4.1 Idiomatic CAs in diagnostic environments

We start with the idiomatic non-compositional N-Adj combinations that host prenominal CAs. Their non-compositionality is uncontroversial and supported by the fact that being of the complex property, N-CA does not entail having either of the properties: *boża krówka* is neither a cow, nor belongs to God. As such, they are predicted to fail all the tests above, as illustrated by the idiomatic expression *boża krówka* [a ladybird], whose CA cannot be used predicatively in (19); nor can it participate in splits licensed by contrastive focus or topic in (20).

(19)  a. Primary predicates

*Krówka była boża.

*cow-*dim was God’s

*b. Secondary predicates

*Krówka wydawała mu się boża.

*cow-*dim appeared him-*dat refl God’s

*c. RC-expansion

*Krówka, która była boża, siedziała na czerwonym płatku róży.

*cow-*dim which was God-*adj sat on red petal rose-*gen

(20)  a. Contrastive focus

*Nawet boża tu nie przylatuje krówka, (nie tylko motyle).

*even god’ s here not flies in cow-*dim, (not only butterflies)*

‘Even God’s cow doesn’t fly in here, not only butterflies.’

b. Contrastive topic

*Boża to do nas krówka nie przyjdzie, tylko łaciata.

God-*adj to-*top to us cow-*dim not come-*fut only spotted

‘God’s cow (=Ladybird) will not come to us, but a spotted one will.’

c. Splits without implied contrast

*Czy Bożą widziałeś krówkę?

if God-*adj you-saw cow-*dim

‘Have you seen a ladybird?’

4.2 ‘Tight unit’ CAs in diagnostic environments

Now let us consider the behavior of CAs in ‘tight units’ that name natural kinds or scientific terms. Again, note that in the examples below we show the judgments for the taxonomic readings of the N-CA combinations. In the parentheses in (21), we provide translations of the qualifying readings of the same adjectives, which are grammatical, in contrast to their classifying counterparts.

(21)  a. Primary predicate

*Panda, którą widziałam w zoo, była wielka.

*panda which I-saw in zoo, was big

*n in the reading: ‘The panda which I saw at the zoo was a giant panda.’

(vs. ‘The panda which I saw at the zoo was big.’)

b. Secondary predicate

*Ta panda wygląda na wielką.

*this panda looks giant

*n in the reading: ‘This panda appears to be a giant panda.’ (vs. ‘The panda looks big.’)

c. RC-expansion

*Panda, która była wielka, ważyła sto kilogramów.

*panda which was giant weighed hundred kilos

*n in the reading: ‘The giant panda weighed 100 kilos.’

(vs. ‘The panda which was big weighed 100 kilos.’)

As shown above, CAs in ‘tight units’ behave similarly to those in idioms by disallowing predicative uses of the adjectival modifiers. However, there is a slight twist with such adjectives: whenever the context explicitly mentions the existing taxonomy of the kind name, in our case, subkinds of pandas, there is a significant improvement in judgments. Providing overt taxonomy appears to license the predicative use of CAs, presumably by supplying both the positive and negative extensions of the N-CA predicate and making the contrast set explicit.

(22) a. Primary predicate with overt contrast

*Panda była wielka, a nie czerwona.

*panda was big and not red

‘The panda was a giant one, and not a red one.’

b. Secondary predicate with overt contrast

*Panda wyglądała na wielką, a nie na czerwoną.

*panda looked on big and not on red

‘The panda appeared to be a giant one, and not a red one.’

c. Expansion to RCs with overt contrast:

*Nowo-przybyła panda, która jest wielka, a nie czerwona, wymaga specjalnej opieki.

*newly-arrived panda which is big and not red requires special care

‘The newly-arrived panda, which is a giant, not a red one, requires special care.’

Similarly, specifying the contrast set appears to license various scrambling phenomena. Overt taxonomy in (23a, b) improves the grammaticality from unacceptable (*), or marginally acceptable (?), to acceptable though not perfect (?). The examples in (23) give the first member of each pair without contrast and the second member with the overt contrast supplied.

(23) a. Contrastive focus with split NPs

i. ??Nawet czerwone mamy pandy w naszym zoo.

*even red we-have pandas in our zoo

‘We even have red pandas at our zoo.’

ii. Nawet czerwone mamy pandy w naszym zoo, nie tylko wielkie.

*even red we-have pandas in our zoo, not only big

‘We even have red pandas at our zoo, not only giant ones.’
4.3 ‘Migrating’ CAs in diagnostic environments

The last group of CAs, ‘migrating’ CAs, are taken here to belong to the intersective-subjective adjective type and to be the product of syntactic derivation. Hence such CAs can also be considered a transitional type – from classifying to qualifying adjectives. Consequently, they are expected to be grammatical in all the environments we are testing here, which is confirmed by the data in (24).

(24) a. Primary predicates

Lampa była naftowa.  Lampa wyglądała na naftową.

lamp was oil-adj lamp looked on oil-adj
‘The lamp was an oil lamp.’  ‘The lamp looked like an oil lamp.’

b. Contrastive topic

i. ??Karłowate to kupiliśmy do naszego zoo dwie świnie.

pygmy to-top we-bought for our zoo two hogs
‘As for pygmy (animals), we bought two (pygmy) hogs for our zoo.’

ii. ?Karłowate to kupiliśmy do naszego zoo dwie świnie, ale takich hipopotamów

dwarf-adj to-top we-bought to our zoo two pigs but such hippopotamuses

jeszcze nie mamy.

still not we-have
‘As for pygmy (animals), we bought two (pygmy) hogs for our zoo, but we haven’t got yet any hippopotamuses of this type.’

To conclude, the data show that ‘tight unit’ CAs forming taxonomic kinds are ruled out in predicative constructions on a par with idiomatic CAs, as predicted by their analysis as semi-lexical formations. Yet, predicative uses of such CAs might be licensed by the overt contrast set between various subkinds of N being provided by the context, which shows that they also possess some properties of syntactic phrases, being indeed a borderline subclass of CAs.

5 Conclusion

Noun phrases with qualifying modifiers are traditionally taken to be the product of the syntax, with adjectives merged with nouns as attributes or predicates. Idioms, on the other hand, are generally assumed to be the product of the lexicon. Adj-N compounds, which underlies all their particular syntactic properties. Polish CAs have been argued not to form real compounds with their head nouns (see Willim 2000, Rutkowski and Progovac 2005, Rutkowski 2007). On the other hand, we have argued that they are not free syntactic phrases either (CP&T 2010a, b, and 2011 in press). They have always fallen between the chairs with respect to various tests. In this paper, we have shown that this behavior is expected under the premises that they represent a heterogeneous class of modifiers forming a continuum rather than a set of discrete semantic categories. Some adjectives on this continuum form intermediate cases, as, for instance, CAs in ‘tight units’, which are considered here as semi-lexical formations denoting taxonomic kinds. Therefore, they exhibit mixed behavior with respect to the syntactic tests discussed – pairing with idiomatic CAs, on the one hand, yet capable of showing behavior typical of syntactic phrases in a particular environment, on the other hand. This dual nature of Polish CAs does not seem to be a language unique phenomenon – English associative adjectives discussed in Giegerich (2005) also seem to exhibit properties placing them at the lexicon-syntax border. The new classification of CAs put forth here appears to account for the bulk of various properties exhibited by CAs and does it in a parsimonious way.
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When Epistemic Modal Needs Imperfective Aspect

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This paper provides evidence in support of the imperfective being a semantically vacuous morpheme whose presence is guaranteed by specific conditions that rule out the perfective. The paper enriches the recent discussions concerned with the puzzle of how to account for various readings of the imperfective (Cipria and Roberts 2000, Hacquard 2006) by providing a semantic analysis of an interpretation not attested in languages like French, Italian and Spanish, on which the discussions have focused so far. I argue that the Russian and Polish patterns dubbed as Existential Factual Imperfectives (cf. Grønn 2003) carry a silent Epistemic Modal that selects the imperfective due to its right semantic type: <s,t> in contrast to the <t> type of the perfective.

Keywords: factual imperfective, existential modal, situation semantics

1 Introduction

The Polish (Pol) and Russian (Rus) constructions in (1–2), and their counterparts in other Slavic languages, have attracted recent attention (Grønn 2003, Dočekal and Kuče 2006) by providing a semantic analysis of an interpretation not attested in languages like French, Italian and Spanish, on which the discussions have focused so far. I argue that the Russian and Polish patterns dubbed as Existential Factual Imperfectives (cf. Grønn 2003) carry a silent Epistemic Modal that selects the imperfective due to its right semantic type: <s,t> in contrast to the <t> type of the perfective.

The sentences of the type in (1a) and (2a) entail the existence of a past event but also make a claim about “a current state of affairs” (Grønn 2003: 26). Their interpretation has been compared to that of the English Perfect (cf. Borik 2006, a.o.). On the other hand, the imperfective morphology in (1b) and (2b) is justified because the events over which the verbs predicate are already present in the discourse context. Neither of these two types of imperfectives is attested in languages like Spanish, French or Italian, on which the recent discussions on the imperfective (cf. Cipria and Roberts 2000, Hacquard 2006) have focused so far.

The analysis for such patterns (dubbed as factual imperfectives, FI, cf. Grønn 2003) will be conducted in the framework of situation semantics (Kratzer 1989 and 2006). The core proposal is that an interpretation of factual imperfectives is dependent on an event from a discourse. What is interesting, in the contexts in which FI are acceptable, perfective constructions are deviant. The paper will solve the puzzle of why the perfective is deviant in such configurations and what is the property of the imperfective that is responsible for the readings in (1–2).

The syntax of factual imperfectives is characterized by two properties: (i) a verb either in its primary imperfective form (with no prefixes and suffixes as in (1a), (1b) and (2b) above) or with the so-called secondary imperfectivization morpheme (e.g., suffix -iv in (2a)); (ii) the lack of any temporal clause or temporal argument. Let us compare Polish (3b) with Italian (3a). The Italian sentence, if uttered without any temporal referrer and placed in the context, is infelicitous, whereas its Polish counterpart in (3b) is perfectly fine:

(3) a. #Gianni studiava matematica. (Ita, Giorgi and Pianesi 2004: 261, (2))
   ‘Gianni studied math.’
   b. Gianni studiò matematica. (Pol)
   ‘Gianni studied math.’

The literature on Slavic aspect (Forsyth 1970, Padučeva 1996, Grønn 2003, a.o.) discusses two ways in which FI makes claims about complete events: the event denoted by the verbal predicate can be either focused/assessed or backgrounded/presupposed. (1a) and (2a) exemplify the first type dubbed as existential (Grønn 2003, a.o.); in both sentences the intonational focus lies on the verbs and what is being introduced to the discourse in each case is the existence of an event. Moreover, although existential FIs refer to some event in the past, the focus of the speaker is actually “on the current state of affairs” (Grønn 2003: 26). At the utterance time of (1a), it is important whether the addressee has the property of being a causer of a break up. Similarly, at the time of the utterance of (2a), it is relevant whether the addressee experienced the event in question or not. In the second type of FI, dubbed as presuppositional (Grønn 2003) or actual (Forsyth 1970, Padučeva 1996), no such relevance between the past event and
the “current state of affairs” occurs. One view on this group of FI is that the existence of the event referred to is already given or presupposed in the context/in the discourse (cf. Gronn 2003). Note that in (1b) and (2b), which represent this class of FI, the focus lies not on the verbs but on another constituent.

Since I will use the labels presuppositional and existential in the paper, I must clarify here that what matters for me in such distinction is not the presence or absence of an event presupposition but rather the relation of the (past) event, over which the verb predicates, to the discourse topic. I adopt Büring’s definition of discourse topic: “a set of sentences/propositions with which the conversation might be continued” (Büring 1999: 1). I will show that although both groups of FI are anaphoric, the nature of their dependence on elements of discourse is different. As we will see in the next section, an existential FI indirectly answers the question established by a discourse topic. On the other hand, the presuppositional FIs are used in order to avoid repetition: they come with free situation variables that receive their values from a situation already present in the discourse.

The paper captures the semantics of factual imperfectives in Polish and Russian within a situation semantics of the kind proposed in Kratzer (1989 and 2006).

2 Viewpoint Aspect in Polish and Russian

In Polish and Russian, like in other Slavic languages, any given verb is either perfective or imperfective. In the majority of cases the non-derived verb stems are imperfective, and the perfective forms are derived by means of a prefix. In the cases where prefixes bring a semantic change that is additional to the aspectual change, the prefixed forms can be further imperfectivized through the addition of a suffix. Very often the term secondary imperfective is used to refer to the forms with such suffixes, and the name primary imperfective signals the lack of aspectual morphemes. (4) shows the derivation pattern and (5) contains examples of all its stages:1

(4) simple imperfective → prefixed perfective → secondary imperfective (prefixed perfective + imperfective suffix (ii))

(5) a. czytać od-czytać [od-czyt]-ywa-ć
read-IMP read.OUT-PERF read.OUT-SI

b. pisąt’ vy-pisąt’ [vy-pis]-yva-t’
write-IMP write.OUT-PERF write.OUT-SI

The perfective forms convey punctual, terminative or definite sense. They are not compatible with durative, continuous and indefinite interpretations due to the fact that the input to perfective AspP, a prefixed predicate, has already in its denotation a complete and non-homogenous event. I will assume that it is so because the verbal prefix, a type of a derivational morpheme, originates inside the VP and functions as eventualities modifier (cf. Zucchi 1999, Filip 2005, Borik 2006, a.o.)

(6) Renée Fleming za-śpiewała “Glitter and Be Gay”.
Renée Fleming-NOM prePF-sing-PAST.PAST.PAST.PAST.FEM Glitter and Be Gay
‘Renée Fleming sang “Glitter and Be Gay”.

The event in the perfective sentence in (6) is understood as complete and viewed as the entire event of Renée Fleming singing this particular aria, not as some sub-event of her vocal performance.

The imperfective, on the other hand, can co-occur with both classes of eventualities: (i) durative, continuous and homogenous, and (ii) punctual, terminative and non-homogenous. It gives rise to several distinct interpretations, including progressive, habitual, iterative and factual.

(7) a. Virginia pisał artykuły, gdy Nelly weszła z herbatą.
Virginia-NOM.FEM write-IMPF.1SG article-ACC when Nelly entered with tea
‘Virginia was writing an article when Nelly entered with tea.’ Progressive

b. Ewa grała Balladynę w każdy piątek.
Ewa-NOM play-IMPF.PAST.PAST.PAST.PAST.FEM Ballady-a-ACC in each Friday.
‘Eve played Ballady each Friday (used to play).’ Habitual

c. Jan kopali piłkę przez 10 minut.
Jan-NOM kick-IMPF.PAST.3SG.MASC ball-ACC for 10 minutes
‘John kicked the ball for ten minutes.’ Iterative

d. Jola czytała “Wojnę i pokój”.
Jola-NOM read-IMPF.PAST.PAST.PAST.PAST.FEM War and Peace-ACC.
‘Jola has read “War and Peace”.’ Factual

The denotations of the verbs in the first three sentences predicate over activities, a type of durative, continuous and homogenous eventualities. (7d), an example of the factual imperfective, stands out in this group of sentences in the respect that:

(i) the event predicated over by the imperfective VP is viewed as non-homogenous,
(ii) the sentence carries an implicature that the event is complete, i.e., that Jola has read the entire book.

Moreover, while in order to obtain the progressive, habitual and iterative readings a temporal phrase is needed, the FI reading is the default option that surfaces if such phrase is absent. In the next section I will specify which data should be classified as FIs, and, hence, I will lay the ground for the analysis to be presented in the situation semantics framework.

1 Not all Polish and Russian verbs fit in with the schema in (4); in the class of perfective verbs, for example, there are also morphologically simple forms, and forms derived from imperfective stems through the addition of a suffix. Moreover, Polish also has aspectual pairs in which perfective and imperfective forms come from different morphological stems. However, the schema in (5) represents a very productive morphological process which the majority of Polish and Russian verbs can undergo.
2.1 Characteristics of the factual imperfective

In the triplet below, the factual imperfective (8a) is juxtaposed with a progressive and a perfective construction. All three sentences have past tense morphology.

(8) a. Renée Fleming śpiewała “Glitter and Be Gay”.
   ‘Renée Fleming has sung/ sang “Glitter and Be Gay”.’

b. Kiedy wszedłam na salę, Renée Fleming śpiewała “Glitter and Be Gay”.
   ‘When I entered the concert hall, RF was singing “Glitter and Be Gay”.’

c. Renée Fleming zaśpiewała “Glitter and Be Gay”.
   ‘Renée Fleming sang “Glitter and Be Gay”.

The perfective and FI both make a claim about a complete and non-homogenous event of Renée Fleming singing “Glitter and Be Gay”. The difference in truth conditions between them boils down to a difference in the parts of the world about which these statements are. The perfective refers to a specific situation (in the past) in which the event predicated over by the verb is contained. For example, (8c) may be a part of a narrative of somebody describing the 2004 gala in Madrid. The utterer wants to inform the hearer what Renée Fleming, the American opera star, sang during this particular concert. The factual imperfective may also be used in such a narrative but only if parts of the event are already in the discourse background. Consider (9a) and (9b) below: because a particular event of singing is already given (A’s utterances), B’s responses contain the verb in the imperfective form. Perfective in both examples will be grammatical but odd: B’s answers would be taken as repetitions of what was already said.

(9) a. A. Czytałam, że Natalie Dessay zaśpiewała w Madrycie “Glitter and Be Gay”.
   ‘I read that Natalie Dessay sang “Glitter and Be Gay” in Madrid.’

b. Renée Fleming śpiewała “Glitter and Be Gay”.
   ‘Renée Fleming has sung/ sang “Glitter and Be Gay”.’

c. Kiedy weszłam na salę, Renée Fleming zaśpiewała “Glitter and Be Gay”.
   ‘When I entered the concert hall, RF was singing “Glitter and Be Gay”.’

As was stated in the introduction, the aspectual literature uses the term presuppositional in regards to this subclass of imperfective (cf. Grønn 2003, a.o.). Note that they differ in terms of the information structure: In (9a), the agent receives (contrastive) focus, whereas in (9b) it is the theme that is focused. I will not discuss the presuppositional FIs in much detail in this paper: there is a dependency between the presence of imperfective morphology and a specific topic/focus structure and I leave such dependency for further research.2

2 As was noted by Forsyth (1970) and Grønn (2003), a.o., in the case of the existential FI, it is the verb that receives focus, whereas with the presuppositional FI, the focused constituent is not the verb itself. Consider the pair in (i):

   (i) a. Marcin [malował(I) z Jędrzejem] [made(I) to J] a painting.
   ‘Marcin has already made a painting.’

b. Ten obraz [malował(I) Sargent] [made(I) S] a painting.
   ‘This picture was painted by Sargent.’

In (ia), which represents the existential reading of FI, we expect the existence of a relevant result situation with Marcin having the property of having made a painting – the verb malował receives focus. On the other hand, in the example of the presuppositional reading (ib), the verb remains unfooused, the direct object (this picture) is topicalized, and the agent (Sargent) – focused. We can imagine (ib) being uttered by a museum guide who is showing a specific painting to a group of visitors; since the spectators see the painting in front of them, they do not have to be informed that the event of making this painting had occurred – such an event is, using the terms from Grønn (2003), backgrounded/presupposed.

3 Within this study, topic is defined as a question, i.e., a set of propositions, or a set of questions (a set of sets of propositions) – cf. von Fintel (1994), Büring (1997), a.o.
(11) a. Me: Kogo powinnam zaprosić?
   'Whom should I invite?'
b. The music director: # Renée Fleming za-śpiewała (P) “Glitter and Be Gay”.
   'Renée Fleming sang “Glitter and Be Gay”.

In (11), the director ignored my question and simply informed me that Fleming sang “Glitter and Be Gay”. Because he did not locate the event in time, I assume that the singing took place shortly before his answer was uttered. Contrary to the imperfective construction in (10b), (11b) does not stand in any logical relation to the discourse topic.

Before I analyze what that relation in (10) is, I will compare the existential reading of FI to the reading of the so-called English Resultative Perfect (cf. Portner 2003). As has been already noted in the literature on several occasions (Borik 2006, a.o.), the two types of constructions have a very similar semantics. If the Polish imperfective sentence in (10) is replaced by an English Resultative Perfect construction, as in (12), the scenario stays the same, I am asking whom I should invite for my gala), the English sentence will imply that I should invite Renée Fleming, which is exactly how I understand my Polish FI in (10).

(12) Renée Fleming has sung “Glitter and Be Gay”.

In the next section I review the analysis of the semantics of Resultative Perfect developed in Portner (2003). My own proposal for Polish and Russian EFI constructions is inspired by his approach.

### 2.2 Portner’s (2003) proposal for the English Resultative Perfect

First of all, let me make this clear: the semantic equivalence between Polish Factual Imperfective and English Perfect, illustrated by examples in (10) and (12), is obtainable with only one out of numerous interpretations of the Perfect. We talk here about an analogy between existentials and a reading of the Perfect exemplified in (13):

(13) Mary has read *Middlemarch*. (Portner 2003: 459, (2))

Intuitively, (13) can be paraphrased as follows: there is some current state caused by Mary’s having read *Middlemarch* (Portner 2003: 499). We do not know yet what the current state is because we were given (13) out of the blue, i.e., out of the discourse context. If we take (13) to be a reply to *We need to get an explanation of George Elliot’s style. Who can we ask?*, then this current state is Mary’s understanding Elliot’s style (cf. Portner 2003: 499–500). Whoever utters (13) in such a context means that Mary will be a good choice in our search for a person able to explain the style of Elliot. Such reading is obtainable because, at the time (13) is uttered, the following set of propositions is established in the conversation:

(14) [If someone who isn’t stupid reads an author’s book, they understand her style; Mary is smart; George Elliot wrote *Middlemarch*] (Portner 2003: 500, (73))

Example (14) represents the knowledge shared by the participants of the discourse at the time (13) is uttered, the so-called Common Ground (cf. Stalnaker 2002). In Portner’s approach, this set restricts the domain of quantification of a modal operator that resembles the epistemic ‘must’. The proposition that Mary has read *Middlemarch* is added to (14) – call it a subset of a Common Ground – and a causal relation is established between the members of this set. In view of all the propositions in (14) plus the causal relation between (14) and *Mary has read “Middlemarch”*, (13) states that Mary must be able to explain Elliot’s style.

For Portner (2003), the modal operator in English Resultative Perfect (and also in so-called Current Relevance Perfect) comes from a presupposition like this:

(15) A sentence S of the form PERFECT (φ) presupposes: $\exists q[\text{ANS}(q) & P(q)]$.

Where ANS is true of any proposition which is a complete or partial answer to the discourse topic at the time S is uttered. (Portner 2003: 499, (71))

The operator P is similar to epistemic ‘must’, and p is the proposition uttered by φ. (15) reads that sentence S presupposes that in the set of worlds compatible with what the speaker and the hearer know in the world of evaluation, the proposition uttered by φ is a complete or partial answer to the discourse topic at the time S is uttered.

Note the similarities between such an interpretation of English Perfect and the reading of Polish Factual Imperfectives as discussed in the previous section:

(i) both RP and existential FI constructions stand in logical relation to the discourse topic; in other words, they indirectly answer the question that the topic sets;

(ii) the propositions that RP and FI represent become a part of Common Ground and enter into a causal relation between elements of CG.

At the time the Polish (10b) is uttered, the following Common Ground is formed:

(16) [Opera singers need more time to prepare for a performance than my invitation would give them. They can turn down my offer due to the short preparation time. If someone has already performed an aria which I would like to have as a part of my gala, she/he may not mind the short notice. I would like to include “Glitter and Be Gay” in the program.]

When (10b) is added to the set in (16), an implication about a certain result state arises: Renée Fleming is the best singer to be invited for my show.

Both English RP and Polish EFI “highlight a result” of the event over which verbs in these construction predicate. What that result state is depends on the discourse topic and the knowledge and presuppositions shared by the discourse participants (i.e., Common Ground).
In the remaining parts of this subsection I will highlight the semantic differences between the two types of constructions. I will specify why instead of adopting Portner’s model presented in (15), I develop a different solution in order to account for the semantics of Polish and Russian existential FIs.

First, the notion of a result state is necessary for the interpretation of existential FIs, whereas Portner’s model in (15) does not impose any restrictions on the kind of relations between perfect sentence and the material in the Common Ground. Portner has a good reason not to assume such restrictions though: a Perfect construction (rather than on causal relations in CG) may rely on what Portner describes as ‘evidentiary’ ones giving rise to the so-called current relevance interpretation. The utterer of (17), for example, gives us information about his current state: out of the blue or as an answer to How are you?, this sentence will suggest that the speaker is still ill.

(17) I have been diagnosed with cancer. (Portner 2003: 502, (77a))

A Polish FI construction would not refer to a current state if there is no causal relation in the CG available to the discourse participants that could lead them to such a state. The FI in (18) is deviant in the context provided.

(18) A: Jak się masz?
   ‘How are you?’
B: # Chorowałam.
   ‘I was sick.’/’I have been sick.’

The idea of a Perfect equipped with a presupposition such as in (15) allows for a unified account of various readings of Perfect constructions. In our approach to the semantics of existential FIs we should aim at a more specific account.

Another characteristic of these constructions that differentiates them from the English Resultative Perfect is that it is possible for FI to imply (and not to entail) an existence of a singular complete event.

(19) Renée Fleming śpiewała *Glitter and Be Gay*, ale nie skończyła całe arii.
   ‘Renée Fleming has sung “Glitter and Be Gay”, (*but she did not finish the aria).’

As (19) indicates, the assertion that the entire aria was sung is merely an implication, because it can be cancelled. Note the contrast between (19) and the perfective (6), repeated here as (20), where such cancellation is impossible.

(20) Renée Fleming za-śpiewała *Glitter and Be Gay*, (*ale nie skończyła całe arii).
   ‘Renée Fleming sang “Glitter and Be Gay”, (*but she did not finish the aria).’

In (20), the completeness of the event (with respect to the length of the aria) is entailed. In the case of English RP, the completeness of the event denoted by the verb is also entailed, hence Perfect parallels Polish Perfective in this respect: Renée Fleming has sung “Glitter and Be Gay”, (*but she did not finish the aria).

Finally, adopting Portner’s proposal and attributing the reading of existential FIs to the presence of a presupposition would separate the FIs from other Polish Imperfective constructions (i.e., Progressive, Habitual, Iterative, and Generic). I would rather assume that the usage of Imperfective morphology is not coincidental in all of these readings and direct my analysis as to check this assumption.

3 Factual Imperfectives in the Situation Semantics Framework

3.1 Situations

In the framework chosen in this paper, utterances are evaluated with respect to partial worlds. Consider the following scenario and the Polish sentence in (21) – the complete actual world might be too coarse-grained if used to evaluate A’s utterance.

Scenario: A and B talk about their friend Piotr. B entered the conversation knowing that Piotr has a girlfriend whose name is Marta and that she is his second girlfriend. With his first, named Ala, Piotr broke up some time ago. But now A informs B:

(21) Piotr rzucił *dziewczynę*.
   ‘Piotr broke up with his girlfriend.’

What B most likely understands from such statement is that the word girlfriend refers to Marta and A talks about the event of Piotr breaking up with Marta rather than Ala. If, in fact, Marta and Piotr are still together and B has good evidence for it, he will, we can imagine, object to A’s statement. Note that A’s utterance, although false when referring to the actual situation with Piotr and Marta, is true with respect to another part of the actual world – the situation in which Piotr broke up with Ala.

A particular situation about which an utterance is will be referred here as this utterance’s topic situation (cf. Kratzer 2006). Topic situations covertly restrict domains for nominal and verbal quantification. In (22), for example, the particular situation talked about by A provides a semantic value for the definite description dziewczynę [girlfriend] and determines which event of Piotr’s breaking up with his girlfriend the VP denotes. To account for this type of restrictions, I follow Percus (2000) and Kratzer (2006), a.o., and assume that verbs and NPs introduce their own situation arguments and that such arguments are articulated via syntactically represented variables. (22) gives us the syntax and semantics of (21) in this framework in the spirit of Kratzer (2005 and 2006).

See Kratzer (1989 and 2006).

The idea that every utterance is about a particular situation goes back to John L. Austin (1950); other terms used in the literature: focus situation, described situation, reference situation.
functions as the definite D-quantifier (in the sense of Partee, Bach, and Kratzer 1987). In (22) where the verb is perfective, the operator in the specifier of the NP predicates. Such variables are exactly like pronouns with the only difference that they are unpronounced. The λ-abstractor gives us the function that characterizes the situation we are quantifying over. This function, given the situation \( S_0 \), yields the truth value 1 as long as, in \( S_0 \), Piotr, who is located in \( S_0 \), broke up with whoever the girlfriend in \( S_0 \) is.

The topic situation \( S_0 \) binds situation variables \((s')\) which are arguments of lexical terms. Having my scenario, I can reconstruct the Common Ground in the following way:

\[ \text{The topic situation } S_0 \text{ binds situation variables } (s') \]
element of the FI structure. This epistemic operator takes two arguments: a restrictor (a set of proposition that are compatible with what is known at the time of the utterance) and a nuclear scope (a salient TP that answers the question established by the discourse topic). The proposition denoted by the (overt) TP with the Imperfective AsP in its scope is part of the restrictor; that is, it belongs to the epistemic modal base. We can now formally account for the fact that the proposition denoted by EFI enters the Common Ground and highlights a result state which answers the QUD. In (25) that gives us the structure of the EFI in (23), the Common Ground as discussed so far will be the first argument of MOD.

Note that this argument comes from a predicate modification: to the set of propositions from the epistemic accessibility relation another proposition (here: “Piotr has broken up with a girlfriend”) was added. The TP, in the nuclear scope represents the salient proposition “Piotr is the best candidate to help Tomek”.

(25)

CON in (25) stays for CONTENT – a set of proposition that the speaker believes are true in the actual world (Hacquard 2006). CON has in its restriction an event variable (e0). I follow Hacquard (2006 and 2010) in assuming that modals are relative to the actual world (Hacquard 2006). CON has in its restriction an event variable (e0). I follow Hacquard (2006 and 2010) in assuming that modals are relative to the actual world (Hacquard 2006). CON has in its restriction an event variable (e0). I follow Hacquard (2006 and 2010) in assuming that modals are relative to the actual world (Hacquard 2006). CON has in its restriction an event variable (e0). I follow Hacquard (2006 and 2010) in assuming that modals are relative to the actual world (Hacquard 2006).
I argue that the imperfective aspect in FIs is a semantically vacuous morpheme selected for the right type as an argument of the epistemic modal operator. The imperfective in FIs does not describe situations in terms of the temporal relations of contain and being contained; neither does it reflect the presence of a generic or habitual operator: 

\[ [[\text{pf}]\rightarrow P.\ x.\ s \wedge P(s) \text{ and } s = s].\]

4 Conclusions

I analyzed Polish and Russian existential factual constructions in which the imperfective is a default – a semantically vacuous morpheme whose presence is guaranteed by specific conditions that rule out the perfective. In both languages, in addition to the reading under discussion, the imperfective verb forms can also express: progressive, habitual, iterative, and pressuppositional factual readings. Within the ongoing discussion concerned with the puzzle of how to account for distinct readings of the imperfective (cf. Cipria and Roberts 2000, Hacquard 2006), my analysis supports the view advocated by Hacquard (2006) that various meanings of the imperfective are introduced by distinct operators. The way in which the progressive and habitual imperfectives are associated with modality differ from the relation between the epistemic modal and imperfective aspect in existential FIs. In the case of the latter constructions, the imperfective is selected by a modal merged above TP. This makes existential FIs unique among other types of the imperfective.

References

Partee, B. E. Bach, and A. Kratzer (1987), Quantification: A cross-linguistic perspective, NSF proposal, University of Massachusetts, Amherst.
11 Non-Selected Arguments in Polish Impersonal Body Sensation Expressions: Datives and Causer-PPs

This paper deals with some selectional properties of predicates of impersonal body sensation expressions (IBSE). In contrast to the well-known properties of these predicates, such as 3rd neuter singular agreement or the absence of a nominative argument, the presence of non-selected non-nominative elements (dative, accusative DPs or pronouns) seems more controversial. Here, it will be shown that it is possible to specify the context in which these elements may be omitted: first, it is necessary to opt for a finer-grained typology of nominative-less sentences, and second, one must take into consideration the interaction between the aspectual nature of the predicate itself and the non-selected arguments present in the narrow context. The latter fact will shed light on a notion of a Causer-PP that appears as an adjunct within some nominative-less sentences and which reveals more about the nature of impersonal sentences.

Keywords: imperfectives, Causer-PPs, generics, nominative-less constructions, dative non-selected arguments

1 Introduction

Nominative-less constructions in Slavic have recently received much attention as far as the definition of the subject is concerned (Bondaruk and Szymanek 2007, Moore and Perlmutter 2000, Schoorlemmer 1994). Given that in all Slavic languages, these expressions share several common properties, such as: (a) absence of the nominative argument; (b) 3SG neuter predicate, (c) presence of non-selected, non-nominative elements, our attention will turn here to different issues which have not been taken into consideration until now. As the nominative subject is absent, issues that have been brought into light turn either upon the (non-)existence of the subject position and null expletives in those sentences (Babby 1989, Fehrmann and Junghanns 2008), or the necessity of postulating an independent Extended Projection Principle (EPP) (Lavine and Freidin 2002, Miechowicz-Mathiasen 2009). Also, as has been noticed (Sigurdsson 2002), as far as the presence of dative participants is concerned, the relevant question is not whether the dative element is a subject (or not) but rather why a nominative argument is absent.

In this paper I shall bring forward some data that shed light on a particular kind of participants that went so far unnoticed. It will be shown that the absence of a nominative Agent goes hand in hand with the fact that some predicates involved in impersonal expressions may somehow imply a causative reading.

The aim of this paper is twofold. First, I will show how some nominative-less sentences may combine with a causative participant which appears in the impersonal (nominative-less) sentences either as a dummy pronoun (which I call here an indefinite causer: coś [something] in Polish, cita-to in Russian) or as a Causer-PP (od + DP [from]-phrase). The properties of the former are discussed in section 2, where it is also argued that the typology of nominative-less constructions should be finer-grained, even within some well-established classes of expressions (e.g., Adverbial Predicates or verbs of light and sound emission). The latter are addressed in section 3, where I focus on a particular configuration (imperfective impersonal predicate lacking the dative DP and combined with a Causer-PP) that yields a generic reading. It will be shown that the imperfective aspect does not hold on its own for a generic reading and that further elements are required for a sentence to receive a characteristic interpretation.

The second aim of this paper is to show that the distinction between Agents and Causers is supported by the fact that impersonals seem to be more closely tied to anti-causatives rather than to passives, contra the traditional approaches according to which impersonals are assumed to be a particular kind of the passive.

2 Study of the reference of impersonal sentences: establishing finer grained classes

2.1 Adverbial predicates and argument selection

Adverbial Impersonal Predicates (AIP) without any participant are rather rare in Slavic. They are mostly restricted to some atmospheric predicates but even within this subgroup one may find some predicates that must combine at least with a locative PP. Indeed, AIPs combine with participants such as: dative Experiencers, locative PPs or other complement phrases. Even though inventories of possible combinations have been proposed (Bondaruk and Szymanek 2007, Fisiak, Lipinska-Grzegorek, and Zarbrocki 1976, Grzegorzewshkova 1975, Guiraud-Weber 1984, Wolniska 1978, Śpiewak 2000, among others), the exact distribution of these participants remains unclear and most accounts of AIPs take these elements to be rather optional.

The following examples illustrate the fact that AIPs may combine with some participant with the judgment of being...
of a different nature, and additionally show that there is a human referent restriction on some of the predicates. Examples (1a) and (1b) are in complementary distribution. For instance, the adverb *latwo* [easy(ily)] can only be found with a dative DP, whereas *parno* [sultry] in (1b), which may be considered as denoting the state of atmosphere, cannot combine with a dative DP but instead is preferable if found with a locative PP or adverb. One of the options to explain this difference would be to say that (1b) behaves like a meteorological predicate and therefore it is prohibited while referring to a state of mind/body of a human. Nevertheless, this observation may be contradicted by example (2), where the predicate *duszno* [airless] denotes either a body sensation (2a) or an atmospheric condition (2b).

(1) **obligatory human referent**

<table>
<thead>
<tr>
<th>a. Adamowi bulgotać</th>
<th>b. Tam* Adamowi bulgotać</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adam-DAT bulgotać</td>
<td>tam* Adam-DAT bulgotać</td>
</tr>
<tr>
<td>‘It was easy for Adam.’</td>
<td>‘It was sultry there/*to Adam.’</td>
</tr>
</tbody>
</table>

(2) **optional human referent**

a. Adamowi duszno.  
Adam-DAT bulgotać

‘Adam is suffocating.’

The above data suggest that one needs to look for some finer grained distinctions in order to understand the ambiguous behaviour of dative participants within nominative-less constructions. In the next section, I will look for some subtle distinctions within a class of verbs of sound and light emission and show that when applied to impersonal constructions of body sensation, they seem to behave in a way distinct than elsewhere.

### 2.2 Finer grained classification of verbs of sound and light emission

Since this paper deals with different readings of impersonal body part sensation expressions (IBSE), below is a non-exhaustive sampling of verbs of sound and light emission as well some other verbs that I classify here as motions verbs. These verbs may be frequently found in IBSE as referring to traditional senses, mainly: hearing, sight, touch, and smell.

All these verbs exhibit multiple argument realizations, but here we are interested exclusively in the case where the verb combines with a locative PP. As far as this combination is concerned, I propose that two types of uses should be distinguished.4

#### CLASS 1: [+AGR] predicate combining with a locative PP that is not a human body part

(i) Type A

*bulgotać*

Type A designates some meteorological phenomena or the quality of a space, external to a human body. Type B indicates a sensation situated in a body part of a living being. Type C covers utterances that indicate the spread of a fragrance or a smell of air. In contrast to types A and B, type C governs an (instrumental) argument. Guiraud-Weber (1984: 321) treats the *U* = *can* (that replaces the dative DP in Russian) as a semantic extension of the locative complement and type B as being rather lexicalised.

#### CLASS 2: [-AGR] predicate combining with a locative PP that is a human body part

4Guiraud-Weber (1984: 313) proposes a similar classification, where one may find three different usages of locative utterances:

(i) Type A

*V lesu dark-ADV*

(ii) Type B

*V wiskah stručit.*

(iii) Type C

*V kommate pahnet jarubkami.*

Type A designates some meteorological phenomena or the quality of a space, external to a human body. Type B indicates a sensation situated in a body part of a living being. Type C covers utterances that indicate the spread of a fragrance or a smell of air. In contrast to types A and B, type C governs an (instrumental) argument. Guiraud-Weber (1984: 321) treats the *U* = *can* (that replaces the dative DP in Russian) as a semantic extension of the locative complement and type B as being rather lexicalised.

Examples (3) and (4) respectively illustrate constructions of CLASS 1 and CLASS 2, which trigger different kinds of behaviour on which I elaborate immediately below.

In (3a) (cf. Class 1) the verb *bulgotać* [to bubble] appears with a locative phrase that does not denote a human body part. It agrees with a nominative subject, which makes the whole sentence [+AGR]. Example (3b) necessitates the presence of a dummy pronoun. As far as the meaning of the pronoun is concerned, in this case it refers to an emitter that happens to be fully predictable.

(3)

a. W kuchni wesoło bulgotać barszcz ukraiński.

‘In the kitchen the Ukrainian bortsch bubbles gaily.’

b. Coś*/O bulgotać w kuchni.

‘Something bubbles in the kitchen.’

Conversely, in (4) below (cf. Class 2) there is no such subject and therefore the sentence is [-AGR]. The locative PP denotes a human body part and a dative DP is necessary for the sentence to be grammatical. It has been proposed in the literature (Haspelmath 1999, König and Haspelmath 1998, Sarić 2008) that dative DPs in Slavic are very often used to express inalienable and/or external possession. I assume that by reducing the difference between the two types of constructions certain crucial properties have been overlooked. Regarding Class 2, (cf. (4b)), the dummy pronoun is optional, while the dative participant seems to be obligatory.

5Although this aspect is not relevant to my immediate purpose, one may notice that verbs with *'/O* combine with an accusative DP instead of a dative one. It seems that even though both types denote a body part relation, verbs with the dative participant focus on a particular body part, while those with the accusative one describe the feeling that encompasses the whole body.
is worth noting that unlike in (3b), ing problem of the reference of the proINDEF "that
coś
[something]". However, she admits that there is a remain-
be expressed overtly by
which express an event whose causer is non-human (…) entail three semantic partici-
smell and light emission within the LFG approach. She suggests that "many verbs
pants" one of which is "an unidentified or undisclosed non-human causer/instigator".
Indeed, in order to receive a generic interpretation, an IBSE must: (i) have its predicate
to argue here that this semantic split is syntactically dependent on at least three factors.
This section analyses empirical findings based on a corpora research (IPI PAN, PEL-
3.1
ces are quite straightforward (human reference and adverbial predicates, cf. 2.1), others
within some well-known groups of nominative-less constructions. While some differen-
2009: 378–398) offers an interesting analysis of certain verbs of sound,
Kibort (2009: 378–398) offers an interesting analysis of certain verbs of sound,
I wish to propose here that the pronoun 
coś
[something] refers to
an undefined but possibly predictable emitter. The presence of 
coś
[something] in (4) is less straightforward to account for. It
I assume that in this case the pronoun must be interpreted as an indefinite causer. I will
focus on the notion of causer in the next section, where it will be shown that the indefinite causer can be replaced by a prepositional causative phrase.

2.2.1 Interim conclusion
The aim of this section was to emphasise the need for some finer grained distinctions within some well-known groups of nominative-less constructions. While some differences are quite straightforward (human reference and adverbial predicates, cf. 2.1), others (IBSE and verbs of emission, cf. 2.2) need some further analysis. In the next section, I will provide additional evidence to legitimize the existence of the indefinite causer.

3 Generic impersonal sentences denoting body sensations
3.1 General overview of possible interpretations and combinations of three factors
This section analyses empirical findings based on a corpora research (IPI PAN, PEL-
Table 2. Aspect [Perfective vs. Imperfective], Dative [obligatory vs. optional] and Causer-PP combinations

<table>
<thead>
<tr>
<th>Causer-PP combination</th>
<th>Perfective</th>
<th>Imperfective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dative obligatory</td>
<td>episodic reading</td>
<td>habitual reading</td>
</tr>
<tr>
<td>Episodic reading</td>
<td>Cf. 3.2.1</td>
<td>3.2.2</td>
</tr>
</tbody>
</table>

3.1.1 Aspectual oppositions and genericity
The following ideas were inspired by Dahl’s (1995) Minimal Marking Tendency (MMT), where it is argued that there is a strong tendency in natural languages to have the imperfective aspect (the least marked) associated with the generic reading. Dahl’s proposal is quite difficult to carry over to impersonal expressions. I assume that in order to obtain a generic interpretation in impersonal sentences (cf. Class 2), the imperfective aspect is one among several required factors, but does not lead by itself to the generic interpretation. As far as Polish is concerned, MTT has been applied by Rudnicka-Mosiadz (2004) to generic NPs (kind generics). Here, I will focus only on the other type of generics, to which Carlson and Pelletier (1995) refer as to characterizing sentences. Thus, characterizing/generic sentences express non-accidental7 generalizations over individuals, events and situations.

Using impersonals to express genericity is not a Slavic-particular property. The English one and the German man are the two most common examples of generic R(-eferential) impersonal pronouns (Cabredo-Hoffert 2011, Siewierska 2007). Slavic languages do not have any overt pronouns of this kind. Instead, they make use of 3.SG.N forms that are very often considered to be a particular kind of passive. According to Malchukov and Ogawa (2011: 36), after Shibatani (1985): “particular modes of defocusing may involve different parameters including (...) genericity”. It becomes even more straightforward to see impersonal sentences from this angle, if we recall the fact that another type of defocusing strategy, possibly involving genericity (Condoravidi 1989, Lakokiu 2005, Zwart 1997), may be found in anticausative constructions or in middles. The frequency of the generic usage by means of impersonal sentences may be reinforced by

7In this paper I am not concerned with the case of an ellipsis of a dative DP; therefore, one must keep in mind that throughout the paper, the label “dative obligatory” applies only to sentences without any discursive context permitting the ellipsis.

7For reasons of space I will not focus on the differences between two types of non-accidental generics: (i) descriptive type, without implying or specifying the relevant property factor; (ii) in virtue of type: asserting that the sentence is non-accidentally true in virtue of some contextually determined property associated with the denotation of the subject (Greenberg 2002). Instead, I will put forward the claim that generic sentences admit a kind of modalized reading.
the fact that in languages like Polish or Russian there are no overt determiners. Nevertheless, as it will be shown in the forthcoming section, neither the impersonal 3.SG.N predicate, nor the imperfective aspect may convey the generic reading on its own.

Imperfective verbs normally contain no information about the duration of the action they denote. Therefore, it is not surprising that the imperfective aspect is the preferred form for the reading that is supposed to express some kind of generalisation holding over a particular period of time. The perfective aspect, on the other hand, is normally used to denote an event (cf. Smith 1991).

### 3.1.2 Absence of the dative DP?

One of the three conditions for the generic reading to emerge in IBSE is the possibility of omitting the dative DP. This possibility is independent of discursive rules that may occasionally leave some constituents unarticulated. In particular, I assume that contrary to specific, episodic and habitual contexts, where the dative is obligatory, the generic context does not need to specify the referent of the body part the sensation refers to. My claim is in keeping with the mainstream descriptions of the inalienable and/or external possessors, and subsequent works, such as Fillmore (1967), Guéron (2006), Haspelmath (1999), or Landau (1999), which seem to give a satisfactory account of the presence of the dative DPs in this context. Moreover, it would be undesirable to claim that generic sentences lack dative DPs, as some indefinite dative DPs: ludziom [to people], nikomu [to nobody], każdemu [to everybody], niektórym [to some people] may be introduced in such contexts without a major influence on the generic reading, as the genericity itself is claimed to be a rather flexible notion that oscillates between universal quantification and habitual readings.

### 3.1.3 Causer-PP: form and meaning

Now we will move on to the precise definition of the nature of the element that I assume to be essential for the emergence of the generic reading within impersonal sentences as analysed in this paper. This element is a Causer-PP. We will see in the next section that one should actually attach more importance to this participant, which on the face of it, appears to be only an adjunct. Here, I will first outline a brief typology of Causer-PPs. The corpora research that I have conducted in order to establish the exact context in which Causer-PPs are non-derived nominals is claimed to be rather flexible notion that oscillates between universal quantification and habitual readings.

As far as semantic properties of Causer-PPs in general are concerned, Kallulli (2006: 203) notices that they are fine with anticausatives, but appear unacceptable with a cause which is not an event:

(5) Kallulli (2006): (6a) and (7)

a. The window cracked from the pressure.

b. *The window cracked from John/from the book.

This seems to be only partly true for Causer-PPs in Polish. On the one hand, the eventive nature is inherent to embedded Causer-PPs that are deverbal nominals (gerunds), but on the other hand, some embedded DPs are non-derived nominals, a proper account of which is much less obvious.

Deverbal nominals are a hybrid category (Lees 1960), namely they exhibit nominal morphology, e.g., agreeing in case, but they are also sensitive to aspect and retain the argument structure of the verb they are derived from. Examples in (6) have all the required imperfective aspectual specification. Moreover, all of them denote unbounded events. This fact brings our attention to another notion that actually helps understand the behaviour of the following Causer-PPs. Indeed, the fact that they appear as either unbounded or iterative events, rather than punctual ones, makes them radically different from nominative Causers, which are not restricted in the same way.

(6) Deverbal Nominals (nie/cie

a. Od biegania/ kluje mnie w sercu.

from running-IMP.F.3SG.GEN stab-3SG.N I-ACC in heart-N.LOC

‘From running (it) is stabbing me in my stomach.’

b. Od żucia guszy strzela w uszach.  

from chewing-IMP.F.3SG.GEN gum-F.3SG.GEN snap-3SG.N in ears-LOC

‘From chewing gum one may have a snapping sound in his/her ears’

---

8. For transparency I am using here the label ‘Causer-PP’, which corresponds in Polish and Russian to the phrase od + DP.GEN.

c. Od palenia papierosów charczy w płucach.
   ‘From smoking cigarettes one may have a wheezing sound in his/her lungs.’
d. Od czytania w samochodzie *(Adama) mdliło.
   ‘From reading in the car Adam feels sick/nauseates.’
e. Od czytania zaszło *(mi) w ustach.
   ‘From reading my mouth became dry.’

Examples in (7) illustrate non-derived nominals that may occur in Causer-PPs:

(7) Non derived nominals in Causer-PPs
a. Od zapachu zepsutego mięsa podnosi mi się w żołądku.
   ‘From the smell of the rotten meat I feel like vomiting.’
b. Od kataru swędzi mnie w nosie.
   ‘From the catarrh I’ve got an itchy nose’.
c. Od zapachu podnosi mi się w żołądku.
   ‘From the smell I feel like vomiting.’

d. Po-ciernięcia *(mi) w uszach.
   ‘My ears have been pricked.’

Some further properties of these causers, namely the impossibility of appearing as a nominative DP, will be discussed below this section.

3.2 The non-causative
Examples below show that when the perfective predicate combines only with a locative PP, the dative participant is required. This is also the case when the predicate is imperfective. As the dative participant is obligatory and the Causer-PP is absent, it is impossible to find a sentence with a generic reading in this context.

3.2.1 The perfective
The perfective aspect is not the one that one would expect to yield a generic interpretation as it is normally used to encode “a single completed or temporally delimited event, which has a terminal point” (Krifka 1992: 50). Furthermore, it should be noted that the reading that obtains with this combination is slightly different with verbs of sound emission and with verbs of light emission. While the predicates in (8a–c) are semelfactives/inchoatives, the one in (8d) is a telic, change of state verb.

(8) a. Za-bulgotało *(mi) w żołądku.
   ‘I heard a bubbling (sound) in my stomach.’
b. Za-burczało *(mi) w brzuchu.
   ‘I felt a rumbling (sound) in my belly.’
c. Za-piszczało *(mi) w uszach.
   ‘I heard a screeching (sound) in my ears.’
d. Po-ciemniało *(mi) w oczach.
   ‘My eyes darkened.’

3.2.2 The imperfective
When the predicate is imperfective, the dative DP remains obligatory. Moreover, the expected generic reading is difficult to obtain. Even though one may find the habitual reading under specific circumstances, in this configuration, it is quite far from receiving a modalised-like reading. There are several possible readings here, which is expected as the imperfective aspect in Slavic is known for a wide range of usages (cf. habitual, iterative, etc.). The following examples differ from those in (8) in the sense that they are atelic (vs. telic) and either stative (vs. inchoative/semelfactive) or denoting a change of state (without the resulting state being implied).

(9) a. Bulgocze *(ci) w żołądku.
   ‘There is a bubbling sound in your stomach.’
b. Burczy *(mi) w brzuchu.
   ‘I feel rumbling sounds in my belly’
c. Strzela *(mu) w stawach.
   ‘He has a snapping sound in his joints.’
d. Piszczy *(mi) w uszach.
   ‘I hear a screeching (sound) in my ears.’

 especialmente when the sentence combines with an adverb of frequency: 

(i) Zawsze bulgocze *(ci) w żołądku.
   ‘There is always a bubbling sound in your stomach.’
3.3 The causative

In this section I provide two types of examples, both with a causative PP that I introduced above. The difference between the two types of examples presented in this section is above all aspectual (perfective predicates as opposed to imperfective). It will be shown that neither the presence of a Causer-PP nor a particular aspect may contribute by itself to yielding a generic reading. Only the imperfective aspect of the predicate together with a Causer-PP may lead to this kind of interpretation. The generic reading is in my view the only one where a dative DP may be omitted. Importantly, even though it does not help in determining the nature of the dative element, mainly because the insertion of an indefinite DP ludziom [people,dat] remains possible, it does shed light on the fact that the dative is not actually the only candidate to occupy the subject position.

3.3.1 The perfective

In section 2, I discussed the nature of the dummy pronoun coś [something], which may optionally appear with the expressions under scrutiny. I proposed that from a referential point of view coś should be analysed as an indefinite causer. Example (10a) indicates that the dummy pronoun and the Causer-PP are in fact in complementary distribution. They are both optional but may not co-occur, except in contexts where the function of coś is exclamative and not causative.

(10) a. Coś z głodu za-burczało *(mi) w brzuchu.
   Something/from hunger-M,gen PERF-rumble-3SG,mn,Past I-DAT in belly-M,loc
   ‘Something/from being hungry I felt a rumbling (sound) in my belly.’
   b. Od uderzenia za-mgliło *(mi) oczy.
      From beat-M,gen PERF-fog-3SG,mn,Past I-DAT eyeACC
      ‘From (being) beaten I got my eyes fogged.’

3.3.2 The imperfective

In the examples given below, the three factors described in 3.1 are taken together, and it is only in this context that the dative argument seems to be optional. Thus, the difference between (11a) and (11b) is not very striking. As a matter of fact, as was said above, in examples like (11a) or (12a), where the dative DP is absent, the reference is meant to be ‘to people’ or ‘to one’, the fact which can be further supported by indefinite DP insertion.

(11) a. Od niedoboru wapnia strzela w kościach.
    From lack-gen calcium-gen snap-3SG,mn in bones-LOC
    ‘From the lack of calcium one may have a snapping sound in one’s bones.’
    b. Od niedoboru wapnia strzela *(mi) w kościach.
       From lack-gen calcium-gen snap-3SG,mn I-DAT in bones-LOC
       ‘From the lack of calcium one may have a snapping sound in his/her bones.’

(12) a. Od palenia papierosów charczy w płucach.
    From smoking-M,gen cigarettes-M,gen wheeze-3SG,mn in lungs-LOC
    ‘Smoking cigarettes usually causes a wheezing sound in one’s lungs’.
    b. Od palenia papierosów charczy *(mi) w płucach.
       From smoking-M,gen cigarettes-M,gen wheeze-3SG,mn I-DAT in lungs-LOC
       ‘Smoking cigarettes usually causes a wheezing sound in my lungs’.

The correlations established in this section provide highly interesting information about both the non-selected dative and causative arguments, as well as the conditions under which a generic reading can arise. Concerning the former, we may be tempted to conclude with Carlson and Filip (1997) that genericity is not exactly a member of some other category system, but instead involves multiple parameters reaching aspectual, temporal and modal systems at the same time. Carlson and Filip (1997) is reminiscent of Comrie’s (1976) seminal work on aspect, where he classifies aspectual oppositions, subsuming genericity and habituality under a “single unified concept of imperfectivity” (Comrie 1976: 25). They arrive at quite different conclusions, at the same time challenging Comrie’s claims.

Another reason for underlining these data is that impersonal constructions prohibit any external argument in the nominative case. Although it is well known that impersonal sentences are agentless, to my knowledge the fact that a canonical Causer is prohibited as well is rarely mentioned in the literature. Examples below show that the generic reading may not be obtained if the Causer is nominative. These examples go against the
general idea that impersonal sentences are somehow related to a speaker’s choice or his/her lack of knowledge about the Agent/Causer of the event denoted by the predicate.

(13) a. *Ślód burczy w brzuchu.
    hungenf-M.NOM rumble-3SG.M in belly-LOC
   b. *Palenie papierosów charczy w płucach.
    smoking-IMP.NOM cigarettes-GEN whistle-3SG.M in lungs-LOC

As we shall see in the next section, while an impersonal sentence is inaccurate with a by-phrase (an agentive adjunct), it is entirely acceptable with a from-phrase (a causative adjunct).

The question that arises then is how to explain this kind of asymmetry. On the one hand, it moves us away from the idea that impersonal sentences represent a kind of passives and on the other hand, it brings us closer to anticausative constructions, which seem to behave in a parallel way. In the next section, I will illustrate this tendency and show some examples of constraints on Causers that play a fundamental role in understanding the behaviour of Causer-PPs in impersonal sentences.

4 Impersonals, passives, anticausatives: agents and causers

In the previous sections we relied heavily on the observation that (IBSE) may receive a generic reading that render the dative argument optional in a particular context ([+perfective, +dative, +causative]) and that one of the three elements required to obtain such an interpretation is a Causer-PP. The present section will deal with another aspect of the Causer-PPs showing that the relation between a certain type of causers and impersonal sentences is not accidental.

Some theoretical studies (Jaeggli 1986, Kallulli 2006, Roberts 1987, Schäfer 2008) point out that passive and anticausative constructions involve implicit arguments. Indeed, a few important restrictions on by-phrases and from-phrases were put forward, namely dealing with selectional properties of demoted arguments. Additionally, it was shown that the passive constructions differ from the anticausative ones, in view of the complementary distribution of ‘by-phrases’ and ‘from-phrases’, as the first is an agentive PP-phrase and the second a causative one.

In Polish one finds nearly identical distribution. The causative from-phrase has been presented throughout the previous sections as applied to impersonal constructions. Interestingly, the same Causer-PP may be found with anticausative constructions. At the same time, on a par with anticausatives, the Causer-PP is not permitted in passive constructions. The following data illustrate the above generalisation. Examples (14) and (15) represent two familiar alternations: active-passive and causative-anticausative:

(14) active/causative
   a. active
      Piotr złamal gałąż.
      Peter-NOM break-3SG.M.PAST branch-ACC
      ‘Peter broke the branch.’

   b. causative
      Wiatr złamal gałąż.
      wind-M.NOM break-3SG.M.PAST branch-ACC
      The wind broke the branch.

(15) a. passive/anticausative
   a. (passive) *from-phrase
      Gałąż została złamana (przez Piotra)(*od wiatru).
      branch-F.NOM was broken-3SG.F.PAST by Peter-ACC/from wind-GEN
      ‘The branch was broken by Peter/* from the wind.’
   b. (anticausative) *by-phrase
      Gałąż złamala się (od wiatru)(*przez Piotra)CAUSATIVE.
      branch-F.NOM break-3SG.F.PAST REFL (from wind-GEN)/by Peter-ACC because Peter-ACC
      ‘The branch broke from the wind’/* ‘The branch broke by Peter’
      ‘The branch broke because of Peter.’

Impersonals (like anticausatives) do not accept agentive by-phrases. Nevertheless, the Polish translation of the by-phrase is polysemic. Indeed, as shown in (15b), przecz-DF.PACC, may be agentive, in which case it is not acceptable with the anticausative, but it may also be causative and thus consequently fit perfectly the anticausative context. So now, the question is whether there is any difference between the two causative phrases: the by-causative and from-causative. I propose that the contrast is above all semantic, although not exclusively. The by-causative phrase indicates rather the person or the event that is responsible for the resulting state. One may say (for (15b)) that the branch broke ‘because of Peter’ (using przecz-DF.PACC) and add ‘even though Peter did nothing to break it’. Additionally, if we compare (16a) and (16b), we see that the by-causative (16a) does not permit the deletion of the dative unselected argument that would trigger a generic reading. From these data, we are led to conclude that the by-causative phrases and the by-agentive phrases differ in structural terms, the first one being an adjunct and the second one an implicit argument, more specifically speaking: an implicit causer argument.

(15) a. Przez szampana szumi mi(*o) w głowie.
    because champagne-ACC whistle-3SG.GN 1-DAT in head-LOC
    Because of the champagne my/*one’s head is whistling.’
   b. Od szampana szumi o(*i) w głowie.
      from champagne-GEN whistle-3SG.GN 1-DAT in head-LOC
      ‘From the champagne one’s head is whistling.’

Finally, the conclusions we can draw from the data is that impersonal sentences are in many respects similar to anticausative ones. Further research is necessary in order to evaluate the exact distinctions in structural terms as far as passives, anticausatives and impersonals are concerned.
5 Conclusions

Because of the absence of the nominative argument, the impersonal 3.SG.N expressions have been considered to be in a way quirky. The present analysis points to new directions in the study of nominative-less sentences. Leaving aside the problems of subjecthood or of the defectiveness of the predicate, I have concentrated upon the finer-grained distinctions within IBSE (Impersonal Body Sensation Expressions).

Even though my initial goal was to establish whether the dative participants that appear with these expressions are obligatory or optional, the analysis additionally unravelled the relevance of a new participant, a Causer-PP. This particular participant emerges quite frequently in the generic context, whose exact environment – [-perfective, ± dative, +causative] – I have examined here.

In the last section it was shown that the Causer-PP’s contribution to our understanding of impersonal sentences must not be underestimated mainly because of the fact that its link with anticausative and impersonal sentences at the same time undermines our vision of impersonals as a kind of passive.

The fact that my proposal fails to account for the full range of nominative-less sentences shows that they are far from being a homogeneous group and that the topic calls for further and in-depth investigation, which I leave to my further research.

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IPI PAN http://nkjp.pl/poligarp/
PELCRA http://www.nkjp.uni.lodz.pl/
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This paper examines the interplay of coda /s/ aspiration and deletion in Chilean, pointing to non-surface apparent opacity at the word boundary when faced with misalignment between prosodic and morphological constituents caused by resyllabification. Several OT strategies will be tested to account for these processes, the conclusion being that neither standard OT nor opacity-centered sympathy is a suitable mechanism for addressing the issue. They are not equipped with sufficient means to remove all of the obstacles posed by the Chilean data. The only viable option is to draw on the clear distinction between the lexical and post-lexical levels observed in the Chilean data, which calls for the distinction between word-level and phrase-level phonology within OT.

**Keywords:** opacity, Optimality Theory, DOT, /s/-aspiration, Spanish phonology, sympathy theory

1 Introduction

It is a well-known fact that syllable-final /s/ undergoes aspiration in several Spanish dialects. The process has been widely discussed in the literature (Harris 1983, Colina 1997, Kenstowicz 1996, Lipski 1999, among others). It is typically described as positionally-conditioned segment weakening originating in southern Spanish Andalusian dialects, with a wide array of manifestations across Spanish language varieties and various types of interaction with other phonological processes. Typically, coda /s/ is weakened to /h/ both word-medially and wordfinally (esto [this] /ɛh.tɔ/; pues [so] /pwɛh/), which can be analysed as a coda condition against /s/.

The process of aspiration is not straightforward, however, due to the fact that Romance languages allow for resyllabification across word boundaries. This results in opacity effects in the form of overapplication where the aspirated segment occupies the onset and not the coda position (e.g., las alas [the wings] /la.ha.lah/). In descriptive terms, this might be described as spreading (or advancement) of a widely attested weakening process to environments other than the initial coda, which is traditionally analyzed as the aspiration trigger. This is suggested by Lipski (1999: 198), who argues that “s weakens to /h/ in preconsonantal contexts [...] at the second stage, syllable-final s-reduction extends to all syllable-final contexts, including phrase-final [...] while retaining word-final prevo
catice /s/. [...] the extension to include word-final prevoacalic /s/ occurs in the phonologi
cally most advanced dialects.” The latter case implies that “all instances of word-final /s/ are realised as /h/, regardless of the presence or nature of the following segment”. The resultant opacity effect described by Lipski, however, is doubled in dialects which permit segment deletion as an s-coda condition repair strategy. Chilean Spanish is one of such dialects. One of its characteristic features is its advancement in terms of /s/-aspiration and total loss. Although complete segmental loss is considered uneducated and is socially stigmatized in Chilean, it is the predominant feature of rapid colloquial speech even among the educated speakers, regardless of their place of origin. According to Ce
peda (1990) and Lipski (1994), the rate of /s/-aspiration and deletion is very high across the country and while higher urban classes prefer aspiration, deletion occurs among the middle and lower classes and in rural areas. Consequently, there is no doubt that the two processes are fully productive in Chilean and present an interesting interaction, leading to important generalisations concerning Spanish phrase phonology.

In this article, I present the interaction of /s/-aspiration and /s/-deletion across a word boundary in Chilean, where word-final coda /s/ is deleted phrase finally and before a consonant, while an opacity effect may be observed before a vowel: aspirated /h/ surfaces here due to resyllabification. It will be shown that standard OT (Prince and Smolensky 1993, McCarthy and Prince 1993 and 1995) is unable to account for such a state of affairs. What is more, it will be demonstrated that auxiliary mechanisms designed especially to deal with opacity effects in phonology, such as sympathy (McCa
rathy 1999), are not equipped with sufficient means to remove all of the obstacles posed by Chilean. Based on a careful examination of the Chilean data, it will be concluded that a distinction between the word and the phrase level in Spanish phonology is the key to solving the problem. A DOT analysis (Rubach 1997 and 2000, Kiparsky 1999) will be proposed to account for the data under analysis.

The article is organised as follows. Section 2 briefly presents Spanish /s/-aspiration in interaction with resyllabification within the OT framework in order to provide a background for further discussion. Both a standard OT analysis and a sympathy evaluation are presented to point out problems generated by opaque /s/-aspiration. Section 3 pre

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1 I would like to thank my interviewers for their remarks and criticism, as well as professor Hernán Emilio Pérez Muñoz from the University of Concepción for his invaluable help in the analysis of the Chilean data. I am also grateful to the native speakers I had a chance to interview during my research, especially Rodrigo Andrés Vivanco Muñoz from the University of Concepción for his invaluable help in the analysis of the Chilean data. I am also grateful to the native speakers I had a chance to interview during my research, especially Rodrigo Andrés Vivanco Muñoz from the University of Concepción for his invaluable help in the analysis of the Chilean data.

2 It must be pointed out that because Spanish is fragmented into multiple dialects, each with its own specificities and a different spectrum of phonological processes, coda condition repair strategies are not limited to aspiration and deletion. Gemination and pre-aspiration may be listed among the remaining solutions (see e.g. Morris 2000). Nevertheless, aspiration alone or in combination with deletion is the most frequent strategy in Latin American dialects. I leave other strategies aside as they go beyond the scope of this article.

3 I abstract away from sociolinguistic aspects of Spanish /s/-aspiration and deletion as my analysis is of purely formal character and puts an emphasis on the categorical. For an in-depth analysis of gradualness effects and other sociolinguistic phenomena influencing Spanish speech, see e.g. Quesada (2010) and Frago Gracia and Figueroa (2005), who present interesting remarks on stigmatization and the reverse status quo in Venezuelan Spanish (among others), where aspiration and deletion are the norm while /s/-retention is stigmatized.
sents the Chilean data and generalisations, together with an attempt to account for them under standard OT and sympathy. It concludes that sympathy is unable to generate the correct surface forms and another solution must be sought to address the problem. Section 4 introduces a derivational level within OT to account for the analysed processes. At this point, it is demonstrated that a crucial distinction must be made between word and phrase phonology with a key constraint reranking. Section 5 summarises the article.

2 Spanish /s/ aspiration and resyllabification

As stated in section 1, Spanish /s/ aspiration is typically analysed as positional markedness in the form of a coda condition against /s/. According to Itô (1986 and 1989) and Itô and Mester (1994), among others, the syllable coda position does not license certain featural specifications. This may apply to voice, place or other features (compare the well-attested nasal assimilation, voice assimilation, coda devoicing or cluster simplification processes present across the world’s languages). In line with the previous works on the subject, the loss of oral place features is one of the attested strategies aimed at satisfying segment-oriented coda conditions.\footnote{Note that /s/ aspiration is, in fact, debuccalisation, i.e., the loss of oral place features. The word “aspiration”, however, has been used throughout the Spanish literature on the subject so far and will be therefore retained in this article.} Debuccalisation may be accompanied by the retention of laryngeal constraints, as in the case of Spanish /s/ under discussion here (see Clements 1985, McCarthy 1988, and Trigo 1991). With this in mind, let us turn to a coda condition-based analysis of /s/ aspiration. Take the word esto [this]/θɛstɔ/ as the basis for the analysis. Thus, if /s/ is not licensed in the coda, a positional markedness constraint must be postulated to ensure it does not surface.

(1) \textit{S/CODA: }/s/ is banned from the coda.

Under OT, the above constraint must interact with a corresponding faithfulness constraint advocating for the retention of the relevant place features.

(2) \textit{IDENT(PL): } The place features of the input must be preserved in the output.

To produce the correct result, the faithfulness constraint must be ranked lower than the coda markedness constraint. Given the ranking \textit{S/CODA} \textgreater \textit{IDENT(PL)}, the analysis of the word esto [this] can be illustrated as follows.

(3) OT evaluation of the word esto [this]

<table>
<thead>
<tr>
<th>/ɛstɔ/</th>
<th>\textit{S/CODA}</th>
<th>\textit{IDENT(PL)}</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ɛs.ɔ</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b. *θɛstɔ</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

As presented in the tableau, the proposed ranking is crucial as the optimal candidate would not have been generated otherwise. It is better to be unfaithful to the input than to violate the constraint which bans /s/ from the coda. Consequently, candidate (3b) wins the battle.

Word-medial aspiration, however, is only one manifestation of a coda condition repair in Spanish. When a larger string is examined, it becomes clear that word-edge prosody may render the process non-transparent. While an s-final word produced in isolation or before a pause confirms the fact that /s/ undergoes aspiration whenever it stands in the coda (e.g., pues [so] /pweθ/, chicas [girls] /θi.θaθ/), sequences of two or more words may counter this generalisation. The phrase las cosas [things] surfaces as /laθ.θaθ/ but the sequence las alas [the wings] is syllabified differently: /θaθ.θaθ/. This is due to resyllabification, a process typical for Romance languages, whereby an underlying coda segment is resyllabified as the onset of the following syllable across a word boundary. Resyllabification is conceived of as a process triggered by the need to preserve the most unmarked syllabic structure possible, hence, ideally, to produce CV syllables. Thus, whenever a word-initial onset position is empty, the coda segment of the preceding word is attached to the marked syllable.

The process is blocked if the onset position is already filled (compare /laθ.θaθ/ and /θaθ.θaθ/ above). A generative account of this fact is provided by Hualde (1989), while an OT analysis is presented by, e.g., Face (2002). In a constraint-based approach, ONSET (“syllables must have onsets”, Prince and Smolensky 1993) seems to be the driver of the process, forcing the grammar to fill in empty onset positions encountered across word boundaries, if possible. To satisfy ONSET, in a string of two words, the first of which ends with a consonant and the second beginning with a vowel, the final consonant resyllabifies to form the onset of the following syllable, repairing the non-optimal V(C) structure. This causes misalignment between the morphological and the prosodic structure of the string in question. Thus, the phrase las alas [the wings] is syllabified as /θaθ.θaθ/, running afoul of the constraint banning such a morpho-prosodic mismatch. Consequently, resyllabification can be analysed as an interaction of ONSET with an alignment constraint requiring that the left edge of the stem coincide with the left edge of a syllable.

(4) \textit{ALIGN- L(Sem, σ): } The left edge of the stem must coincide with the left edge of the syllable.

In order for resyllabification to take place, ONSET must be ranked higher than ALIGN- L(Sem, σ), allowing for misalignment, as illustrated below.

(5) Resyllabification in las alas [the wings]\footnote{Assume dialects with aspiration across a word boundary before a vowel.}
With the above analysis of resyllabification in mind, it can now be demonstrated to what extent resyllabification and /s/ aspiration are intertwined. As argued above, /s/ aspiration changes coda /s/ into /h/. Faced with such data as las alas /ha.lah.lah/, however, we need to account for opaque cases in which /s/ is aspirated although it occupies the onset and not the coda position within a word. Rule-based accounts assume that aspiration applies before resyllabification, which means that /s/ is aspirated to /h/ and only then skips into the onset position. Yet an output-based framework, such as Optimality Theory, does not allow for such a maneuver. The simultaneous nature of candidate evaluation based on surface forms and their faithfulness to their input correspondents is unable to indicate the right candidate as optimal without resorting to auxiliary means. This is demonstrated below.

(6) Evaluation of las alas [the wings] with opaque aspiration

<table>
<thead>
<tr>
<th>las + alas/</th>
<th>ONSET</th>
<th>*S/CODA</th>
<th>ALIGN-L(Stem, σ)</th>
<th>IDENT(Pl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. la.ha.lah</td>
<td>*!</td>
<td>*</td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>b. la.sa.lah</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. la.ha.lah</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As illustrated in (6), standard OT is unable to account for aspiration in interaction with resyllabification. *S/CODA plays no role in the evaluation as the input /s/ is resyllabified as the onset of the word alas. Since the segment does not occupy the coda position, the markedness constraint is mute. Candidate (6b) wins the battle. The actual output of /s/ aspiration cannot be treated as the coda of the first word because of the high-ranked ONSET, which ensures that codas are properly resyllabified into the empty onset positions. Thus, candidate (6c) is eliminated.

As argued in section 1, opaque /s/ aspiration across a word boundary is a case of overapplication, which may be analysed under sympathy – a theory designed by McCarthy (1999) especially to account for non-surface-apparent and non-surface-true opacity effects. A reanalysis of the Spanish case in sympathy terms requires that a mutual ranking of ONSET and *s/CODA is established for aspiration. This is due to the fact that none of the constraints introduced so far are apt for the task. ONSET, *s/CODA >> IDENT(Pl) ensures aspiration, while resyllabification is guaranteed by ONSET >> ALIGN-L. Nevertheless, the latter constraint belongs to the surface-based alignment family which does not refer to the input – it evaluates whether the morphological and the prosodic edge coincide in the output string. A similar evaluation can be made by ANCHOR constraints belonging to the faithfulness constraint family. Thus, an otherwise unmotivated change in the approach to Spanish resyllabification must be introduced in order to provide a valid sympathy account of Spanish aspiration.

(7) ANCHOR-L(Stem, σ):

The left edge of the stem in the input must correspond to the left edge of a syllable in the output.

ANCHOR-L ensures that the leftmost segment of the input correspond to the leftmost segment of the output form. This guarantees alignment and, possibly, also prevents deletion/insertion at the edge of a given word, which is sufficient to obtain the correct result in the case of Spanish resyllabification, provided that ANCHOR-L is ranked below ONSET. Thus, the cumulative ranking of the constraints relevant for the evaluation of las alas is ONSET, *s/CODA >> ANCHOR-L, IDENT(Pl). Crucially, ANCHOR-L must be dominated by ONSET and IDENT(Pl) must be dominated by *s/CODA to ensure aspiration. The mutual ranking of ONSET and *s/CODA is unresolved at this point. The same applies to ANCHOR- L and IDENT(Pl). The tableau in (8) examines las alas under sympathy.

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*It is debatable whether such an interpretation of ANCHORING is plausible. The initial role of ANCHORING constraints was to ensure faithfulness between the base and the reduplicant in reduplicating languages, which was later extended to the input-output relation (McCarthy and Prince 1995). Thus in the general sense, there was a crucial distinction between the ANCHORING and the ALIGNMENT family. McCarthy (2000) alludes to this in his work on prosodic circumscription, claiming that ANCHORING can replace ALIGNMENT in several, but not all application domains. Needless to say, the debatable status of ANCHORING may be regarded as a weakness of sympathy in the case under discussion. For a detailed description of the ANCHORING family, see McCarthy (2000).
Sympathy evaluation of las alas [the wings]*

<table>
<thead>
<tr>
<th>las + alas/</th>
<th>ONSET</th>
<th>*s/CODA</th>
<th>⊗IDENT(PI)</th>
<th>+ ANCHOR-L</th>
<th>IDENT(PI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ʷla.sa.lah</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. ʷla.ba.lah</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. las.a.lah</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. ʰla.lah.a.lah</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In (8), candidate (8a) is the transparent candidate which would win without recourse to sympathy. ANCHOR-L serves as the selector. Two candidates obey this constraint: (8c) and (8d). The latter is more harmonic as it violates the other two highest-ranked constraints (they both tie on ONSET). Thus, candidate (8d) is the sympathetic base. All the other candidates are evaluated based on the sympathy constraint: ⊗IDENT(PI). Candidate (8a) is eliminated as it is not faithful to the sympathetic candidate in terms of place features. The opaque candidate in (8b) obeys the sympathy constraint and is therefore selected as the most harmonic. Note that the sympathy constraint must be ranked at least above ANCHOR-L. The above evaluation thus demonstrates that sympathy theory is able to account for opacity caused by resyllabification in Spanish aspiration.

3 Chilean /s/-aspiration and deletion

Having provided a viable analysis of opaque /s/-aspiration across a word boundary, let us now turn to the Chilean data. As already mentioned, Chilean presents two different coda condition repairs in interaction at word boundaries. This interaction is the focus of the present article.*11 Thus, the relevant data containing coda /s/- are provided in (9).**

(9) a. word-medial coda s
   
   *esto [this] /ʰe.tɾ.s/  
   especial [special] /ʰe.tɾpr.sja.l/  
   *desde [from] /ʰe.dɾ.ɾ/  

*bThe flower (⊕) marks the sympathetic base and the sympathetic constraint. The star (+) marks the selector.
**I base my analysis on descriptive works of Spanish dialectologists (especially Lípski 1994) as well as on my fieldwork and on personal communication with Hernán Emilí Pérez Muñoz, phonetician from the University of Concepción, Chile, as well as native speakers: Rodrigo Andrés Vivanco Torres and Jorge Espaleta Inostroza. My research is based mainly on the dialect spoken in the North of Chile. Whether the same generalisations apply in the case of other regions requires further research. However, due to the fact that Chilean presents scarce regional variation and based on Mr Pérez’s intuitions concerning the central and southern parts of the country, it is possible that the whole of Chilean presents the same phenomena.

Note that in a rule-based approach, resyllabification must apply after aspiration and no other rule ordering would produce licit forms. Note that resyllabification is vacuous whenever the onset position is already filled. Otherwise, the rule applies, blocking
deletion which only affects codas. In a parallel account, however, such a solution is not at hand. The intermediate stage of /s/ aspiration across a word boundary before a vowel is not visible on the surface, hence the resultant change from /s/ to /h/ is opaque. If Spanish debuccalisation is triggered by a coda condition against /s/, as is commonly believed, there is no motivation for it in una vez es demasiado and similar forms. Thus, the two distinct repair strategies permitted in Chilean (aspiration and deletion) overlap, which leads to opacity. As a result, aspiration manifests itself only in word-medial position and in opaque cases across a word-boundary. /s/ is lost completely at word edges before a pause or a consonant. The question now is whether standard OT is able to account for such a mismatch.

As illustrated in (9b), Chilean Spanish requires word-final coda /s/ deletion, which is a manifestation of marked structure avoidance whereby a constraint banning /s/ from the coda interacts with the relevant faithfulness constraint and MAX(SEG), which militates against segment deletion.\(^{12}\) As argued in the previous section, ranking *s/CODA above IDENT(PL) ensures debuccalisation. However, in order for the segment to be deleted completely instead of only losing its supralaryngeal node, MAX(SEG) must be ranked below IDENT(PL). The relevant constraint interaction is presented below.

### (11) Evaluation of the word veces [times]

<table>
<thead>
<tr>
<th>/beses/</th>
<th>*s/CODA</th>
<th>IDENT(PL)</th>
<th>MAX(SEG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. bɛsɛh</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. bɛsɛh</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. bɛsɛh</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. *bɛsɛh</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Under the constraint ranking proposed in (11), it is better to delete the segment altogether at the end of a word before a pause than preserve its feature specification from the input or delink the supralaryngeal node alone. Note that words presented in (9a) do not follow this pattern, hence word-edge aspiration requires an adjustment. A constraint militating against morpheme-internal insertion or deletion must be introduced. This is effected by CONTIGUITY.\(^{13}\) Crucially, CONTIG must be ranked above IDENT(PL) in order for the aspirated candidate to emerge as the optimal output.

### (12) Word-internal coda /s/ aspiration in esto [this]

<table>
<thead>
<tr>
<th>/ɛstɔ/</th>
<th>*S/CODA CONTIG</th>
<th>IDENT(PL)</th>
<th>MAX(SEG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. *ɛh.ɛ</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. ɛh.ɛ</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. ɛs.ɛ</td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

In (12), neither the deletion strategy represented by candidate (12b) nor the maximally faithful (12c) fares well compared to the output with debuccalisation. CONTIG plays a crucial role in the selection of the correct output structure.

Across a word boundary, Chilean /s/ followed by a consonant behaves exactly as coda /s/ before a pause. Note that resyllabification is mute in such cases as the initial onset position of the second word is already filled. Such cases pose no problem for the analysis as the proposed constraint ranking is perfectly capable of generating the correct surface form.

### (13) Deletion across a word boundary before a consonant in una vez comí [once I ate]

<table>
<thead>
<tr>
<th>/una + bes + kmu/</th>
<th>*S/CODA</th>
<th>IDENT(PL)</th>
<th>MAX(SEG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. u.na.ʃɛs.kɔ.mi</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. u.na.ʃɛs.kɔ.mi</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. *u.na.ʃɛs.kɔ.mi</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The constraint ranking correctly predicts that candidate (13c) is optimal as it violates the lowest-ranked constraint: MAX(SEG). Yet a problem arises in cases involving a word boundary across which resyllabification takes place. Whenever coda /s/ is followed by a vowel, it is forced into the onset and loses its laryngeal node in the process.

### (14) Aspiration across a word boundary before a vowel in vez es [time is]

<table>
<thead>
<tr>
<th>/hes + es/</th>
<th>ONSET *S/CODA</th>
<th>IDENT(PL)</th>
<th>MAX(SEG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ʃɛsɛh</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. ʃe.ʃɛh</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. *ʃɛsɛh</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>d. *ʃɛsɛ</td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

In (14), candidate (14c) is the most faithful to the input form as it satisfies all the relevant constraints. Nevertheless, it is not the desirable output, the correct form being candidate (14b), which is suboptimal under this constraint ranking as it violates the high-ranked IDENT(PL). The need to fill the empty onset position is satisfied by resyllabification. Candidates (14d) and (14c) do not resyllabify the input /s/ and are hence ruled out by ONSET. It is inexplicable, however, why onset /s/ undergoes aspiration instead of retaining its supralaryngeal specification. Because syllable structure is absent from the input level, candidates cannot be evaluated based on any such information. Output candidates are compared with the input formed by a contiguous string of segments devoid of prosodic information. Therefore, the driver of aspiration instead of deletion across a word boundary before a vowel seems to be somewhat different: the positional markedness constraint banning /s/ from the coda plays no role in candidate evaluation here.

---

\(^{12}\) MAX(SEG): Every segment of the input has a correspondent in the output (McCarthy and Prince 1995).

\(^{13}\) CONTIGUITY: Segments adjacent in the input should be adjacent in the output (McCarthy and Prince 1995).

\(^{14}\) Part of the phrase una vez es demasiado [one time is enough] (cf. 9d).
A closer examination of the two inputs evaluated in (11) and (14), respectively, points to the fact that in an output-based model it is impossible to differentiate between them. Note that the only difference between the two is that the plural *veces* is a separate word, while *vez es* is a phrase belonging to phrase-level phonology. Nonetheless, surface-based models such as standard OT do not make such domain distinctions. It follows from OT architecture that only one output form may be generated by a given constraint ranking based on the same input form. Chilean, however, requires that two different surface forms be generated under the same constraint ranking from the same input. Because OT mechanisms are blind to morpheme or word boundaries at the input level, the plural form input */bes+es/* and the input of a string containing a word boundary */bes/eses/* are evaluated in the same way. As no constraint referring to a word boundary can be postulated to deal with the second example, there is no way of generating a different output.\(^{16}\) Resyllabification only confirms that word boundaries are fluid and do not block phonological processes.

The reanalysis of the Chilean data within the framework of sympathy theory requires a reexamination of the opacity effects manifested by this dialect. Apparently, we are dealing with a double opacity effect, where resyllabification is “trapped” between the processes of aspiration and deletion (cf. point 10). The question is whether sympathy theory possesses the necessary tools to ensure the double counter-bleeding effect.

(15) Word-final */s/* aspiration across a word boundary before a vowel: *vez es* [time is]

<table>
<thead>
<tr>
<th><em>/bes+es/</em></th>
<th>ONSET</th>
<th>*/CODA</th>
<th>IDENT(Pl)</th>
<th>ANCHOR-L</th>
<th>IDENT(Pl)</th>
<th>MAX(SEG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. *βɛ.hɛ</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. ~*βɛ.hɛ</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. *βɛ.sɛ</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>d. *βɛ.hɛ</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>e. *βɛ.sɛ</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>f. *βɛ.hɛ</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>g. *βɛ.sɛ</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

As demonstrated in the above tableau, the provided sympathy solution is not valid for the Chilean data due to the legitimacy of */s/* deletion in this dialect. Given the fact that MAX(SEG) is low-ranked, the incorrect candidate is chosen as the sympathetic base: the most harmonic of the candidates obeying the selector is (15c), the deletion candidate. With such a base, it is impossible to generate the correct output. The important insight here is that the sympathy constraint chosen for the aspiration-only Spanish dialects (cf. point 8) cannot be used here as IDENT constraints have no control over segments which are inserted or deleted altogether. It should be pointed out, however, that the desired output, (15a), has one segment in excess compared to the sympathetic base. A possible solution would be to use a different sympathetic constraint. The task may be performed by DEP(SEG) – a constraint banning insertion.\(^{16}\)

Unfortunately, this solution is futile: a tie is produced between the candidate with */h/* and the candidate with */h/* as a result, letting lower-ranked constraints decide on the winner, as illustrated in (16).

(16) Word-final */s/* aspiration across a word boundary: $\odot$DEP(SEG)

<table>
<thead>
<tr>
<th><em>/bes+es/</em></th>
<th>ONSET</th>
<th>*/CODA</th>
<th>DEP(SEG)</th>
<th>ANCHOR-L</th>
<th>IDENT(Pl)</th>
<th>MAX(SEG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. *βɛ.hɛ</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. ~*βɛ.hɛ</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. *βɛ.sɛ</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>d. *βɛ.hɛ</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>e. ~*βɛ.sɛ</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>f. *βɛ.hɛ</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>g. *βɛ.sɛ</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

As demonstrated in (16), the use of sympathetic DEP(SEG) does not guarantee the correct result. Candidates (16a) and (16b) tie both on DEP(SEG) and on ANCHOR-L. IDENT(Pl) chooses the optimal candidate, which is (16b), contrary to the Chilean data. This is due to the fact that the selector chooses an incorrect base. What is needed here is */h/* retention, which must be reflected somehow in candidate evaluation. The most logical line of reasoning would be to see a trace of aspiration – the exact process triggered by */s/* CODA in the first place – in the sympathetic candidate. This would be similar to the solution for straightforward aspiration cases involving no deletion (cf. the sympathy evaluation from the previous section). Generating a different sympathetic base, however, is impossible under this analysis. Consequently, the sympathy approach must be abandoned.

4 A DOT account of the Chilean data

The analysis of Chilean provided in the previous section leaves us with a few unanswered questions which, apparently, can be dealt with solely by recourse to a separate mechanism drawing on the standard OT model. As the problem of opacity resulting from the aspiration/
deletion interface in Spanish seems to provide room for resolution in standard derivational terms, one of the solutions that come to mind is to introduce a derivational stage in OT. If we were to resolve the matter in a rule-based approach, possibly with the use of Lexical Phonology (Kiparsky 1982a and b, Booij and Rubach 1987) as the basic framework, the most natural step would be to separate word and phrase phonology. Thus, resyllabification and related phenomena would be the domain of the post-lexical component, while /s/ aspiration driven by the coda-condition at the level of the word would have to be placed in the lexical (most probably post-cyclic) component. Similarly, and especially given the fact that word and phrase phonology are different, two separate levels should be postulated for them in the Spanish (and arguably any language) phonology. The distinction between the word and phrase levels in OT draws on earlier analyses proposed by Rubach (1997 and 2000) for Polish, Slovak and Bulgarian, Kiparsky (1999, 2003, 2008a, and 2008b) for Arabic, Fennoswedish and Sanskrit, as well as Bermúdez-Otero (2003 and 2006) for issues related to linguistic change and learnability. Crucially, Kiparsky (1999 and 2003) argues for intrinsic cyclicity in phonology resulting from the stratal nature of phonological derivation. Thus, phonology operates on three distinct levels: stem level (corresponding to the cyclic component), word level (corresponding to the post-cyclic component), and phrase level (equivalent to the post-lexical component). With strictly one reranking per level, three constraint permutations account for the analyzed opacity effects.

Assuming that there are three levels of phonology corresponding to three different domains, the Chilean data can now be analysed. As demonstrated above, a clear distinction between the lexical and post-lexical level can be observed in this dialect. Therefore, the levels relevant for the present analysis are the word and the phrase level. I disregard the stem level, assuming that no change occurs in the phoneme /s/ at this level compared to the word stratum. The word level, however, requires some phonological operation. Given the two repair strategies used to satisfy the coda condition against /s/ in Chilean and the standard rule-based analysis of the data provided in (8), the most logical approach consists in postulating word level aspiration followed by deletion at the phrase level. With this in mind, MAX(SEG) must be ranked higher than IDENT(PL) at the word level to ensure aspiration instead of deletion as the most optimal coda condition repair. *S/CODA must be ranked the highest as the assumed aspiration driver.

(17) Word level aspiration: /bes/

<table>
<thead>
<tr>
<th></th>
<th>*S/CODA</th>
<th>MAX(SEG)</th>
<th>IDENT(PL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td></td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>

Drawing on the generalisations made in the previous sections, the next stage, i.e., phrase level phonology, requires either the retention of /h/ before a vowel as in una vez es demasiado [one time is too much] or its deletion before a consonant or a pause as in una vez comí [once I ate], vez [time] and veces [times]. The former is ensured by ONSET.

(18) Phrase level /h/ retention before a vowel in una vez entre [once I entered]  

<table>
<thead>
<tr>
<th>Word</th>
<th>Phrase</th>
<th>ONSET</th>
<th>CODA</th>
<th>MAX(SEG)</th>
<th>IDENT(PL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>una + he + en.ter/</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>*u.na.fr.en.ter</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>u.na. *fr.en.ter</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note that in (18), the winning candidate presents maximal faithfulness, thus no change compared to the input structure. This is crucial for the analysis: the candidate preserving the /h/ from the input will always win, even if we rerank IDENT(PL) and MAX(SEG) with respect to each other to ensure deletion with such inputs as /una + bres + ksemi/ (cf. point 13). The following tableau demonstrates that it is impossible to generate deletion in the case of an aspirated input produced at the word level under any ranking of the constraints.

(19) Phrase level deletion before a consonant

<table>
<thead>
<tr>
<th>Word</th>
<th>Phrase</th>
<th>*S/CODA</th>
<th>IDENT(PL)</th>
<th>MAX(SEG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>una + bhe + ko.mi/</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>*u.na.fr.he.ko.mi</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>u.na.fr ko.mi</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In (19), the ranking of IDENT(PL) and MAX(SEG) is reversed. Thus, we have *S/CODA >> IDENT(PL) >> MAX(SEG). Despite this operation, however, the undesired candidate is chosen as optimal as it does not offend any of the constraints. IDENT(PL) plays no role in the choice between the aspirated candidate and the one presenting deletion. Due to the change of the input candidate (compared to the evaluation in point 13), (19a) does not violate IDENT(PL) which would otherwise eliminate it in favour of (19c) assuming the ranking IDENT(PL) >> MAX(SEG). What is more, with the present configuration, *S/CODA is no longer the trigger of coda deletion as the segment to be deleted is /h/ and not /s/. In view of the problems identified in point (19), the question is whether we should reject the derivational option altogether or seek another solution. If we reject levels, are we equipped with appropriate tools to derive the correct surface representations? To answer this question, we need to take into account all the conclusions that have been reached so far and build on the foundations provided by the strictly output-based parallel evaluation. As demonstrated in the previous section, Chilean Spanish uncovers an interesting case of opacity where certain forms present on the surface cannot be directly accounted for, given the traditional assumptions related to /s/ aspiration and/or deletion. The supposed driver of the change is a constraint banning /s/ from the coda which can be satisfied in several ways; here: either by removing all the place features or by deleting the coda segment altogether. The opacity effect

9Note that the output of (17) is now the input to (18), together with the other two words. Syllabification is added at the word level, than it is already present in the input to the phrase level. The three words which now constitute the input were generated independently at the word level. I chose a phrase presenting aspiration only because deletion complicates the analysis, as demonstrated in (19).
lies in the interplay of those processes with resyllabification. Yet, the discussed processes go further than that, forcing us to dig deeper into the Spanish phonology and possible drivers of such asymmetrical changes. Classic OT proved impotent when faced with the need to yield two different outputs from the same input form. It comes as no surprise, however: such a maneuver is both technically and formally inconceivable. This conclusion is crucial to the analysis as it allows us to hypothesise about introducing a derivational level. The division of phonology into the levels of words and phrases as separate domains is reasonable as it grasps a crucial generalisation about the Spanish language: although misalignment between the stem and its prosodic structure is permitted, it does not take place inconsequently. The convergence of surface prosodic structures is not straightforward – the surface forms in question are only apparently identical: they do not get identical treatment in phonology nor do they abide by identical rules. In fact, the divergent underlying structures govern the output differences and cause such doubly opaque effects, hence they must be the key to our enigma.

As already mentioned, *S/CODA is virtually irrelevant at the phrase level. Because /s/ undergoes aspiration at the word level, *S/CODA is unable to take an active part in candidate evaluation later on. The segment encountered in the coda at the next level is /h/. Yet if *S/CODA is mute, what is the trigger of deletion? Based on the cases under analysis, it seems that the segment barred from the coda is /h/. It is deleted in vez and una vez comí, where it occupies the coda position, and retained in the onset (una vez entré, una vez es demasiado) or when saved by CONTIG (esto). Based on this asymmetry, it might be postulated that the segment inventory constraint barring /h/ from surfacing in the output is at play. Let us then incorporate *h (don’t be h) into the tableau.

(20) Evaluation of the Chilean data with the use of *h

<table>
<thead>
<tr>
<th>/u.se+he+b+k.o.mi</th>
<th>ONSET</th>
<th>CONTIG</th>
<th>*S/CODA</th>
<th>IDENT(PL)</th>
<th>*h</th>
<th>MAXI(SEG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. u.se+b+k.o.mi</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. u.se+b+k.o.mi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H/u.he+b+h/</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. /b./he</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. /b./c</td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. /b./se</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. /b./bhe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. /b./bheh</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H/b./bheh</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. b/he</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. be</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. bex</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>P/bex.bexh</td>
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<td>a. bex.bexh</td>
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<td>b. be.bex</td>
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</table>

As demonstrated in the above tableau, the incorporation of *h into the constraint ranking is able to account for all the problematic cases. As the problem has lain so far in the fact that deletion cannot be chosen over total input faithfulness, the interference of *h between IDENT(PL) and MAXI(SEG) constitutes a key improvement in the analysis, deeming segment deletion a better repair than leaving /h/ as a coda component. Coda /h/ does not surface due to the violation of *h. Onset /h/ is retained in una vez es demasiado as (20ii.b) and (20ii.c) violate higher-ranked constraints, ONSET and IDENT(PL), respectively. In addition, tableau (20) illustrates an important point. Candidate (20ii.a) violates *h and would be eliminated were it not for the fact that (20ii.c) violates IDENT(PL). Thus, the ranking of IDENT(PL) above *h is crucial for the grammar to generate the correct winner. Similarly, ONSET>>*h guarantees the retention of /h/ in the onset.

To conclude, as *h – a segment inventory constraint crucially present in the grammar regardless of the existence of other types of markedness constraints – is able to deal with all the problematic cases under analysis, it is clear that its role in Chilean phonology is crucial. Nevertheless, this does not diminish the contribution of *S/CODA. In fact, both of these markedness constraints are needed in the Chilean Spanish grammar to account for the presented data. *h ensures the correct evaluation at the phrase level, while *S/CODA is crucial at the word level. Chilean must rank the latter constraint high because only syllable-final /s/ is affected in non-opaque cases. Onset /s/ remains untouched, e.g., semana [week], quise [I wanted] or asombroso [astonishing] cannot have anything else but /s/ on the surface. Word- medial instances of coda /s/ aspiration only confirm this fact, and if we rejected *S/CODA altogether or demoted it to an irrelevant, low-ranked position, we would be forced to postulate onset /s/ aspiration in the opaque cases (e.g., una vez es demasiado). With such a claim, however, the important generalisation that we are dealing with a coda condition would be lost, apart from the fact that no ranking would be able to generate such a mismatch. Furthermore, all this would cause a major disruption in language consistency (coda /s/ sometimes deletes and sometimes gets aspirated, onset /s/ is either retained or aspirated). Consequently, *S/CODA is key to a comprehensive analysis of Chilean aspiration/deletion alongside *h. The above analysis provides motivation for postulating both *S/CODA and *h.

5 Closing remarks

Based on the above analysis, it may be concluded that a strictly parallel account of the Chilean data cannot be provided, even if supported by an auxiliary mechanism in the form of sympathy, whereas the introduction of derivational levels puts the otherwise disparate facts concerning the distribution of /s/ and /h/ into order. The differentiation between the word and the phrase level is perfectly natural and well-grounded. It also serves as a vehicle for ousting opacity from the analysed data, adding further legitimacy to the discussed processes. Under such an approach, treating /s/-aspiration as a coda condition is no longer a mere preconception but a valid and well-visible process. /S/-weakening remains a phenomenon justly associated with codas while
resyllabification is a phrase-level process with the power to shift prosodic borders but
not inhibit word-level phonological changes. This is perfectly grasped within a DOT
analysis and cannot be expressed otherwise.

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On the Triangular Relationship of Velars and Labials in the History of English

ARThUR KJIAK

This paper discusses the intimate phonological relationship between two articulatorily unrelated consonant classes: velars and labials. In this paper we advocate the solution put forward in Backley and Nasukawa (2009), who argue for the presence of the element /U/ in the content of both velars and labials. The historical data we analyse provide robust evidence for their proposal. More specifically, we look at the development of the u-glide in front of the velar spirant in Old English and the Middle English diphthongization before the voiceless and voiced velar fricative. Moreover, we discuss the labialization of the velar fricative in the word-final position. Finally, we explore the problem of historical vocalization which affected the velarized /l/ and led to various qualitative and quantitative vocalic developments. The conclusion we draw from the analysis boils down to the observation that the relationship between velars and labials can be easily captured if we postulate the presence of /U/ not only in the content of labials and /u, w/ but, first and foremost, in velars. What differentiates both categories is the status played by this element, i.e., in labials /U/ functions as the head, while in velars it is an operator.

Keywords: velars, labials, diphthongization, labialization, prevocalization

1 Introduction

The chief aim of the present paper is to provide a uniform account of selected historical processes embracing within their operational domain two articulatorily unrelated segment classes: velars and labials. The analysis proposed here draws on the solution put forward in Backley and Nasukawa (2009) and Backley (2011), who argue for the presence of the element /U/ in the content of both velars and labials. It is hoped that the discussion of the historical data presented below provide robust evidence for their solution. It has long been observed that labials and velars interact phonologically on a cross-linguistic scale. This is also true in English as there are a multitude of processes in the history of this language bringing together not only labials and velars but also the high back vowel /u/ and the glide /w/. To anticipate the discussion in section 3, this intimate relationship can be illustrated on the example of the u-glide development in front of the velar spirant in Old English (OE), e.g., fæhr > furh (furrow). However, it is Middle English (ME) that provides us with a plethora of examples revealing the triangular relationship between velars, labials and /u, w/. For example, one of a large-scale developments operating in that period was diphthongization before the velar fricative. It was preceded, in the case of the voiced velar fricative /ɣ/, by the vocalization of the fricative, e.g., OE drægon > ME drægen > drawen [draw], OE borga > ME bohe, bowe [bow], OE næð > ME nauhte [naught], OE dohtor > ME dohter > dohter, daughter [daughter] and OE dů̆ > ME dů̆̆ > dough [dough]. Interestingly, the same vowels met an identical fate in yet another context, that is, in front of the glide /w/, e.g., OE sāwol > ME sōul [soul] or OE glōwan > ME glōwen [glow]. Towards the end of ME the velar fricative tends to be eliminated from the segmental inventory of the language, e.g., in the final position it is labialized to /ɵ/ as in laughen > laugh, laffe [laugh], rough > rouf, ruff [rough] and yough > enof [enough]. Finally, the triangular relationship is also exemplified by the 15th century vocalization of the velarized lateral /ɹ/. It led to various qualitative and quantitative vocalic developments like, for example, diphthongization, e.g., balk > baulke [ballik, balk] and bolster > boluster [bolster]. In what follows we look more closely at the above-mentioned phenomena with a purpose to capture them in a uniform way. The conclusion we draw at the end of the analysis is that it is the element /U/ which is responsible for establishing the triangular relationship among labials, velars and /u, w/. The analysis is couched in Element Theory (Harris and Lindsey 1995, Backley 2011) and the Strict CV model (Lowenstamm 1996, Scheer 2004 and Cyran 2010). However, before we plunge into a detailed discussion, first we should briefly introduce the basic views on the elemental make-up of phonological segments. Quite obviously, this is done from the perspective of the theoretical model chosen for the analysis.

2 Element Theory

In Element Theory phonological segments are built out of privative cognitive units called elements. Elements differ from the traditional features in that they are linked to the acoustic signal rather than to articulation. At the same time, however, they function as "abstract units of phonological structure which carry linguistic information about segments" (Backley 2011: 7). Another characteristic feature of elements is the autonomous interpretability which simply means that they are large enough to be phonetically interpretable when they occur alone in a segment. For example, a single element /I/ linked to a nuclear slot is realized as the vowel /i/. The same element attached to the onset position is pronounced as the approximant /ɨ/. Crucially, elements may combine with one another and appear together in a single segment forming a complex structure. Thus, the two mid vowels /e/ and /o/ are combinations of /A I/ and /A U/ respectively. Furthermore, in richer vocalic systems like, for example, English, which maintains the opposition between the front closed mid vowel /e/ and the front open vowel /æ/, it is headedness that is utilised to mark certain contrasts. It simply means that the complex structures like /e/ and /æ/ are represented by the same elements, i.e., /A I/ which, however, are ascribed different functions. The vowel /e/ is a compound /A I/ where /I/ is the head. The melodic make-up of /æ/ is identical, i.e., /A U/, but here the element /A U/ plays the role of the head. Finally, there have been some discussions concerning the representation of the schwa and the weak vowels. Representations of the schwa vary from a totally empty position /i/ through the postulation of the neutral element /@/ to structures with a single non-headed resonance element. For example, Backley (2011: 50) represents /æ/ as a single non-headed /A/ while the weak vowel /i/ is defined by /I/.

Although Element Theory is a relatively new approach to segmental structure

1 It has been suggested that there is a fourth element, that is, the neutral element /@/ which is present in all vocalic representations but only shows up if the other elements are absent (Harris 1994, Harris and Lindsey 1995).
where often radically different views on the character and number of elements struggle for dominance, the majority of the researchers agree that the same elements which are used to describe vocalic systems are also active in consonants. It means that the three resonance elements ǀHǀ, ǀAǀ, ǀUǀ defining vocalic segments are active place definers in consonantal systems. However, in order to describe consonants, some additional primes are required and these are ǀLǀ, ǀHǀ and ǀ/ǀ. It does not mean, however, that the latter cannot occur in a vocalic expression. Quite the contrary, in certain systems they are present in vowels as well. Moreover, the internal structure of segments may be affected by the position these segments occupy in the syllable structure. The elemental make-up of a segment may be altered by adding a locally present element or by reducing the internal composition of a segment. Thus, spreading or composition consists in the addition of elements, while the result of delinking or decomposition is the deduction of elements. Both operations must have a local trigger or source and can be observed in vocalic as well as in consonantal systems. This can be illustrated by spirantisation, a process often resulting in elision and involving the lenition of a stop to a glottal fricative, usually through a fricative stage, e.g., /h/ > /h'/ > /l'/ > /l' = ǀH A ǀ > ǀH A ǀ > ǀH A ǀ > ǀ/ǀ. Similarly, in vowel reduction the elemental material is stripped away or the element status is reduced from head to operator, e.g., /a/ > /a’ = ǀA ǀ > ǀA ǀ and /i/ > /i’ = ǀIǀ > ǀIǀ, respectively.

Summing up, vocalic as well as consonantal segments are composed of the same elements which may be affected by the position they occupy in the syllable structure. Since, however, our main concern is the explanation of the relationship between labials and velars rather than a detailed presentation of the Element Theory basic tenets, we do not pursue these issues any further here. For more information and an ongoing discussion concerning the elemental make-up of phonological segments the reader is referred to, for example, Harris and Lindsey (1995), Charette and Gökse (1996), van der Torre (2003), Scheer (2004), Botma (2004), Bloch-Rozmje (2008), Cyran (2010) and Backley (2011), among others.

2.1 Love triangle
As mentioned at the beginning, the phonological relation between labials and velars is well-known in phonological circles and has been present in the discussion at least since Jakobson and Halle (1956). On the other hand, however, the efforts to formally capture this relatedness causes some difficulties especially in traditional articulation-based models of segmental structure (Chomsky and Halle 1968). To put it briefly, the feature specification used by SPE to define velars and labials as respectively [-ant –high] and [+ant –high] makes it difficult, if not impossible, to relate both classes. Quite interestingly, Jakobson and Halle (1956), aware of the common acoustic properties of labials and velars, postulate, still before SPE, the acoustic feature [grave]. This feature, indicating a concentration of acoustic energy at the lower end of the spectrum, defines both categories. Since then, the need to capture the relationship between velars and labials is under constant discussion in various theoretical frameworks (Scheer 2004: 49ff). Note that at first, Element Theory defined both categories by means of different primes (Kaye et al. 1985 and 1990, Harris and Lindsay 1995). Labials (together with the glide /w/) and the high back vowel /u/) contained the element ǀUǀ, while velars were either defined by the neutral element (Harris and Lindsay 1995: 29) or empty-headed (Cyran 2010: 9). Recently, however, the latter solutions have been discarded by some phonologists who attempt to establish a direct relationship between the two categories, e.g., Broadbent (1996), Scheer (2004), Backley and Nasukawa (2009), and Backley (2011).

2.2 Labials and velars
One of such recent attempts to explain the triangular relationship is Scheer (1999, 2004). Scheer’s cross-linguistic survey and the solutions proposed by Lass (1984) and Remnison (1990) lead him to the conclusion that velarity and roundness are two distinct phonological elements. Very briefly, Scheer (2004: 48) claims that the prime defining velarity ǀUǀ is present in all velar articulations (rounded and unrounded). On the other hand, the prime that carries information concerning labiality/roundness, that is, ǀBǀ is present in all rounded and bilabial articulations. This fact may explain the reason why in certain systems /w/ interacts with both labials and velars. This is so because /w/ is claimed to include two elements: ǀUǀ and ǀBǀ. Interestingly, Scheer (2004: 50) is fully aware of the fact that the introduction of the additional element ǀBǀ may be problematic and on the same page he admits in a footnote that “the very existence of this prime may appear awkward, and I would myself prefer a system where one single prime covers labiality, roundness and velarity”. In the same footnote Scheer (2004: 50) mentions the solution offered by Broadbent (1996), who argues for the presence of the element ǀUǀ in the content of both velars and labials. What differentiates both categories is the status played by this element, i.e., in labials ǀUǀ functions as the head, while in velars it is an operator. For some reason, Scheer does not explore this idea, leaving it for future studies. It is Backley and Nasukawa (2009) who follow that line of thought. Similarly to Broadbent (1996), the authors claim that both velars and labials share the same element ǀUǀ. What differentiates both categories is the status played by this resonance element, i.e., it is headed in labials ǀUǀ, but non-headed in velars ǀUǀ. They base their assumption on spectrograms which reveal the presence of a falling spectral pattern identifying both labial and velar resonance (Backley and Nasukawa 2009: 7).

In the remainder of the paper, we look at certain processes in the history of English which back Broadbent’s (1996) and Backley and Nasukawa’s (2009) findings. Thus, based on the discussion that follows, it is concluded that the missing element underpinning the triangular relationship is ǀUǀ.

3 Historical evidence on the triangular relationship
The present section deals entirely with data presentation and the analysis of some selected phonological processes in the history of English. All of them illustrate a close relationship among velars, labials and /w/ plus /u/. The idea behind the analysis is that the application of the solution briefly touched upon in section 2.2 above can provide a

For a more thorough discussion concerning the representation of velars and labials in some earlier theoretical models, see Backley and Nasukawa (2009).

uniform account of some seemingly unrelated phenomena. We begin by discussing the development of /w/ in front of the velar spirant in Old English.

3.1 Glide formation in OE

Although the velar fricative disappeared from the language at a much later time, its loss was triggered by a sequence of processes dating back to Late Old English (Hogg 1992). The vowel/glide development before the velar fricative illustrated in (1) below may be considered as a first step to the loss of the velar fricative in these forms. Consider some examples adopted from Wełna (1978: 51).

(1) furh > furuh furrow
    burh > buruh borough
    holh > holuh thorough
    mearh > mearuh marrow

In (1), the forms in the left-hand column contain consonant clusters of the liquid+velar fricative type. In the following step, the clusters get broken by the u-glide as illustrated by the forms on the right. Interestingly, the ME spelling of some of these forms, e.g., [furrow], [borough], and [thorough] may indicate that the phonetic realization of the velar fricative fluctuated for some time between /u/, /w/ and /x/. The /w/ variant occurred in inflected forms. If it is true that velars, just like labials, contain the element /U/, the development in (1) can be given a straightforward explanation. The velar fricative is the donor of the element /U/, which in isolation is interpreted as /w/ or /u/, depending on the constituent affiliation. Crucially, in Strict CV, consonant clusters are always separated by the empty nuclear slot and similarly, word-final consonants are not final but followed by the empty nucleus (Scheer 2004, Cyran 2010). Since nuclei license preceding consonants, it means that word-final consonants are in a weak position. They are licensed by the empty nucleus. It follows that the velar fricative in (1) occurs in a typical lenition site and as a consequence, it evacuates some of its material to a preceding position. This is illustrated in (2).

(2) furh > furuh

In (2) the velar fricative links to the preceding nuclear slot to gain stability and escape a typical fate of consonants in weak positions – delinking and loss. The /U/ element as-

3.2 ME diphthongization

From around the early 12th century, the process of elimination of English velar fricatives was gaining new impetus. Before they disappear, however, they will leave some traces in the form of primes influencing neighbouring segments. This influence may be illustrated on the example of ME diphthongization. In fact, velar fricatives are the major source of new diphthongs arising in this period. Since it is often the case that (historical) phonological processes are quite complex and inextricably intertwined with other processes,
apart from diphthongization, the following discussion concentrates on some other phenomena like, for example, vocalization. Uncontroversially, there are other sources of ME diphthongs.

Due to space limitations, however, the analysis in this section is narrowed down to these cases which are directly relevant to our discussion, i.e., diphthongization triggered by velar fricatives. Thus we look at the diphthongization before the voiced (3.2.1) and voiceless (3.2.2) velar fricative. Finally, in (3.2.3) we discuss some examples of labialization.

### 3.2.1 Diphthongization before the voiced velar fricative

At the outset of the 11th century, the voiced velar fricative /β/, a contextual variant of /s/, evolves into /w/ and, together with the original glide, contributes to the development of new diphthongs. In other words, diphthongization in this case was preceded by the vocalization of the voiced velar fricative. The examples in (4), adopted from Fisiak (1968: 51) and Wełna (1978: 122ff), illustrate the development in question.

(4) diphthongization before /w/ < /y/

a. OE /øy/ > ME /ow/ > /ou/  
   dragan > dragen > drawn  draw  boga > boge, bowe bow  
   lagu > large > lawe law  (ge)fløgen > flowen  flown  
   saMUX > sawe  saw  ploås > plowes  plows  

b. OE /øy/ > ME /ow/ > /ou/  
   ægan > òwen  owe  
   ægen > ówen, owne  own  

In (4) the voiced velar fricative /β/, which occurs after a back vowel, undergoes the vocalization process as early as Late Old English. It evolves into /w/ in the 11th century and becomes part of a new diphthong with some later modifications. The whole long distance covered by /β/ may be represented schematically on the example of lagu > lawe > law as: OE /øy/ > ME /aw/ > /au/ > LME /ow/ > ENE /ou/. In light of the discussion in the previous sections, the /y/ > /w/ > /u/ development is again a pretty straightforward case. If, as argued in this paper, velars contain the element [UI], the vocalization can be interpreted as a typical example of decomposition which occurs in a weak position, intervocally in this case. In other words, the change boils down to the loss of /HI/ from the internal structure of the voiced velar fricative, that is, /y/ /UI /HI/ > /w/ /UI HI/. As a following stage, the glide forms a diphthong with a preceding vowel and may even be absorbed by it, which results in the appearance of a long vowel (5).

(5) In (5) the element [UI] is interpreted as /w/ under the consonantal slot, i.e., the onset. In the following step this element spreads to the preceding nucleus. The elements get minged, which results in the formation of a complex segment /ów/ /A UI/. The same explanation applies to all the examples in (4) with the proviso that the glide /w/ is able to spread in both directions, docking upon not only the preceding nucleus but also the following one. In the latter scenario, the result is a closing diphthong, e.g., /boga > bowe > bow/. Note that there is no diphthongization in a situation when the voiced velar fricative is preceded by /u/. It may be explained here as a ban on two identical segments. Both the vowel /u/ and the glide /w/ < /y/ contain a single element [UI]. The situation is resolved by the loss of one segment and the lengthening of the original vowel, if short, i.e., /u/ /U /uy/ > /u/ (Fisiak 1968: 51). Finally, note that the representation of the vocalized /y/ may be confirmed indirectly by the fact that the same diphthongization took place before the original /w/7, e.g., OE /clau/ > ME clawe /claw/, OE /blawan/ > ME blowe, /blow/ or OE /flawan/ > ME flowe, /flow/; etc.8

### 3.2.2 Diphthongization before the voiceless velar fricative

It is generally held that the ME voiceless velar fricative had two major contextual variants: a palatal /ç/ and a velar /x/. In the 13th century, these variants became the primary source of new diphthongs. In short, the palatal glide /j/ developed between a front vowel and /ç/, while the result of the same development between a back vowel and /x/ was a /w/ glide. These newly developed glides formed the respective /eiç/ and /oux/diphthongs with the preceding vowels (Fisiak 1968: 51), Wełna (1978: 126)). Since the main concern of this paper is the triangular relationship among labials, velars and /s, w/, in what follows we concentrate on the second pattern, i.e., /æx/ /Ox/ > /æw/ /OUx/ > /æx/ /OUx/.

As to the explanation, it is exemplified by the forms in (6) below.  

As noted by Wełna (1978: 124), in some cases the /w/ is the result of the vocalization of /f/ before velars, e.g., OE /hafce > ME /hævek, hauke, hauke/ [hauk]. Note that this development is predicted by the solution advocated here, as /f/ is a labiodental fricative and so it also contains the element [UI].

More instances of ME diphthongization before /w/ can be found in, for example, Fisiak (1968: 52), Jordan (1974: 124ff), Wełna (1978: 124ff) and Hogg and Lass (2000).
In (6a–b) the glide arises before the voiceless velar fricative which follows a back vowel, either short or long. The mechanism is almost identical to the one discussed in the previous section with the difference that the voiceless velar fricative survives for some time, it disappears much later. Note that the change illustrated in (6), similarly to the developments described in 3.1 and 3.2.1 above, can be explained as a reaction to a newly formed nuclear slot. Finally, note that the source of the glide in (6) must be the following velar spirant /h/ (Fisiak 1968: 51, Wełna 1978: 126).

(6) ME diphthongization before /x/ (Fisiak 1968: 51, Welna 1978: 126)

a. /aɪ/ > /au/ /aɪ/ > /au/  
  tahhte > taughte taught  
  lahter > laughter laughter  
  naht > nauhte naught  
  dāh > daugh dough

b. /ɒɪ/ > /au/ /ɒɪ/ > /au/  
  plōh > plouh, plough plough  
  dohter > dougter dougter  
  souhte > soughe/sought sought  
  nauhte > nauht neught

In order to survive in a weak position, (part of) the voiceless velar fricative docks onto the preceding nuclear slot forming, together with the preceding vowel, a new diphthong. Here, as in (2) above, the voiceless velar fricative is claimed to contain the element /ʌ/ which contributes to a labialized phonetic interpretation. The motivation behind this step will be provided in section 3.3 below. Furthermore, note that the diphthongization of the short vowel can be slightly more complex as in this situation the glide must be assigned to a newly formed nuclear slot. What is crucial to our discussion here, however, is the explanation of the link between two members involved in the relationship triangle, i.e., /x/ and /ʌ/. What they have in common is the resonance element /u/. The same element is responsible for yet another development affecting velar fricatives, i.e., labialization.

3.3 ME labialization

Middle English witnessed enormous modifications affecting the velar spirants which in effect led to their loss. Thus, apart from the vocalization processes mentioned above, the velar spirant has undergone labialization. Consider some examples given in (8) below which illustrate this development.

(8) ME labialization (Welna 1978: 202)

<table>
<thead>
<tr>
<th>ME</th>
<th>OE</th>
</tr>
</thead>
<tbody>
<tr>
<td>clough &gt; clough</td>
<td>clough</td>
</tr>
<tr>
<td>sloge &gt; slough</td>
<td>slough</td>
</tr>
<tr>
<td>cough &gt; coff</td>
<td>cough</td>
</tr>
<tr>
<td>laughen &gt; laugh, laffe</td>
<td>laugh</td>
</tr>
<tr>
<td>troug &gt; trogh, troffe</td>
<td>trough</td>
</tr>
<tr>
<td>rough &gt; rouf, ruff</td>
<td>rough</td>
</tr>
<tr>
<td>ynough &gt; enoff</td>
<td>enough</td>
</tr>
</tbody>
</table>

In (8) the voiceless velar fricative /x/ evolves into a voiceless labiodental fricative /θ/ in the word-final position. Note that it would be difficult to capture this change by means of the traditional, SPE-like binary features, as both fricatives do not have much in common articulatorily. Element Theory, however, is not a speaker oriented approach. In this theoretical model elements are associated directly with the speech signal shared by both speakers and hearers. Since acoustically both velars and labials are characterized by a similar spectral pattern, they are represented by the same melodic prime, i.e., the element /u/. The presence of this element in both the velar and the labiodental fricative is responsible for the development illustrated in (8) above. Thus the /x/ > /θ/ change is interpreted here as a simple reorganization of the melodic content of the velar spirant, i.e., [H A U] > [H A U]. In other words, the non-headed /u/ of the velar spirant is promoted to the headed /u/ in the structure of the labiodental spirant. Finally, note that Backley (2011: 98) argues for the complex resonance representation in labiodentals, that is, [A U]. It means that we need to find a donor of this element in the /x/ > /θ/ development discussed here. As mentioned in sections 3.1 and 3.2.2 above, the source of this element may be the following velar/uvularized spirant. For space limitations, however, this rather tentative solution is not pursued here any further. Needless to say, some additional evidence is required here and this is left for future research. Instead, we discuss yet another change exemplifying the triangular relationship – diphthongization before the velarized lateral.

3.4 ME diphthongization before the velarized lateral

The beginning of a change leading to the pre-lateral diphthongization dates back to the 15th century. The process itself boils down to the development of a transition glide /w/ between a back vowel and the velarized lateral /v/. The development is illustrated in (9) below.

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Footnote 1: This is a case of consonant prevocalization – a phonological process consisting in the development of a vocalic prearticulation by consonants. For a cross-linguistic survey of this process see Operstein (2010).
(9) ME diphthongization before /a/ (Wehna 1978: 192ff)

| In Kijak (2010: 420) it is argued that the glide is assigned to a newly formed nucleus which is incorporated in the representation to make room for the incoming ǀUǀ.

First, note that the lateral in (9) occurs in a weak position, i.e., before the empty nucleus (word-finally or pre-consonantally). In consequence, the lateral undergoes disintegration and its elements evacuate from the endangered position to a neighbouring one. Furthermore, the lateral, as velarized, contains the resonance element ǀUǀ. Now, the development of the glide before the liquid is the result of spreading of this ǀUǀ element to the preceding nuclear slot. Finally, the reason why liquid prevocalization does not occur after front vowels, which contain the element ǀIǀ, is the fact that the combination of ǀU Iǀ in English vocalic system is banned (see section 2 above).

Although the diphthongization in (9) leads to various MoE reflexes, e.g., /æs/ in (9a), /œu/ or /ou/ in (9b), the mechanism behind this development is identical. It consists in the leftward migration of the element ǀUǀ. This spreading results in various (later) modifications such as vowel raising and lengthening via the intermediate diphthongization stages: /aI > /æu > /œu > /œI and diphthongization or lowering and diphthongization: /œI > /œu > /œu and /uI > /ou > /œI respectively. The former development is represented on the example of malt > mault [mault] in (10).

(10) ME diphthongization before /u/ (Wehna 1978: 192ff)

<table>
<thead>
<tr>
<th>a. ME /æu + /I &gt; LME /œu + /I</th>
<th>b. ME /œu + /I &gt; LME /œa + /I</th>
</tr>
</thead>
<tbody>
<tr>
<td>alter &gt; auelae</td>
<td>alter</td>
</tr>
<tr>
<td>malt &gt; mault</td>
<td>malt</td>
</tr>
<tr>
<td>fall &gt; fauln</td>
<td>fall</td>
</tr>
<tr>
<td>walke &gt; wæulke/ walk</td>
<td>yolk</td>
</tr>
</tbody>
</table>

Although the phonological intimacy among velars, labials and /u, w/ is a well-recorded and thoroughly studied phenomenon, we decided to look at it again but from a different theoretical perspective. Our ambition was to shed new light on the mechanics behind various, seemingly unrelated, phonological processes in the history of English. The theoretical model chosen for the analysis proved wise, as it enabled us to answer a number of puzzling questions. Thus, for example, we have offered the explanation for the context and the effects of OE u-gliding before the velar fricative, ME diphthongization before velar spirants and the velarized lateral or vocalization and labialization of ME velarized consonants. The findings of the analysis helped us understand, among many other things, the reason for the close relationship between velars and labials. They are defined by the same resonance element ǀUǀ but in a different function.

In a nutshell, velars in prosodically recessive positions are disintegrated and seek for a place to dock on to. The evacuation often means colonization and merger with the local material. At this stage we can observe various diphthongization effects and this is not the end of the road. The evacuating elements may migrate further left, triggering further modifications such as raising, monophthongization or lengthening. Finally, note that this solution may prove useful in the explanation and understanding of many other historical and/or synchronic phenomena, like, for example, OE breaking, /pI > /œI and /pI > /œI > /œ almost /œ developments from Latin to Old Irish and Latin via Old High Germanic to Modern German respectively, and some contemporary vocalic developments before
/A/ in Estuary English and Cockney.

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Umlaut and Lowering in Swiss German

Regula Sutter

Bromberger and Halle (1989) claim that phonology is fundamentally different from syntax. They argue that rule ordering is a necessary part of phonology, but not of syntax. Their only synchronic evidence, Canadian Raising, was shown to be invalid by Kaye (1990, 2012). This paper shows that another piece of purported evidence, namely Kiparsky’s often cited rule ordering in two dialects of Swiss German fares no better. The two rules that allegedly need to be ordered turn out to be factually wrong. The lowering rule does not properly reflect the data it intends to cover. Umlaut is not a phonological rule – there is no possible phonological context that would render this rule acceptable. Additionally, the proposed change (vowels are fronted) does not cover all alternations subsumed under the term umlaut. If neither of the rules is phonological, then nothing remains to be ordered. The conclusion is that Kiparsky’s example submits no evidence in favour of Bromberger and Halle’s claim. There is no reason to assume that phonology and syntax should be fundamentally different.

Keywords: criticism, lowering, rule ordering, Swiss German, umlaut

1 Introduction

Imagine a world in which advances in syntactic theory have an impact on phonology, and developments in phonology affect syntax! Imagine a world where phonologists are required to understand syntax, and syntacticians are required to understand phonology. Imagine a world, where syntax and phonology are based on the same basic assumptions, and follow the same logic. Why can’t this be so?

To my best knowledge, Bromberger and Halle (1989) are the only ones to have expressed their opinion on this topic publicly – until Pöchtrager and Kaye (2011b), that is. Bromberger and Halle claim that phonology and syntax can never be the same, because for syntax it was possible to move on from rewrite rules and their ordering, while a similar move will never be possible for phonology: the ordering of rules is an inherent part of phonology. This is a very strong claim that needs similarly strong evidence to support it. Unfortunately, their quite substantial paper on the topic contains only one single piece of synchronic evidence: Canadian Raising. Kaye (1990 and 2012) has given two major reasons why this does not hold: one of the dialects (‘dialect B’) never existed, and development in phonology affect syntax! Imagine a world where phonologists are required to understand syntax, and syntacticians are required to understand phonology. Imagine a world, where syntax and phonology are based on the same basic assumptions, and follow the same logic. Why can’t this be so?

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There are a few more examples in the literature that have been used as evidence for the necessity of rule ordering, and therefore also for Bromberger and Halle’s claim. One of them is Kiparsky’s account of microvariation in two dialects of Swiss German. I will show in this paper that this example fares no better than Canadian Raising: neither of Kiparsky’s rules is tenable, they are both factually wrong. With no rules left, there is nothing to order. The strong evidence for Bromberger and Halle’s claim is still pending. Until such evidence is submitted, it is safe to assume the null-hypothesis: that phonology and syntax are parallel.

This paper is organised as follows: section 2 contains a very general introduction to Kiparsky’s example of rule ordering. In section 3, I will clarify an important aspect of Kiparsky’s account: I will try to define which dialects he was actually referring to. Section 4 takes a closer look at the lowering rule, while section 5 deals with the umlaut rule.

Kiparsky quotes Enderlin (1913) as source for the data on the Kesswil dialect and Wanner (1941) for Schaffhausen. I have used the same resources – these are the only ones to cover the dialects in question – but I have adapted the transcriptions throughout.

2 Kiparsky’s example

According to Kiparsky (1968: 178–179), microvariation between two dialects of North-Eastern Switzerland can only be explained if the order in which certain rules apply is different in these two dialects. The ordering of the two rules is crucial for this example, and therefore rule ordering is essential to phonology. The rules in question are lowering (an o is lowered to ò if it is followed by a coronal obstruent or r) and umlaut (a vowel is fronted in the relevant context). The observation that sparked this claim is the following: the plural of underlying pokà [arp] is pokà in both Kesswil and the relevant dialects of Schaffhausen. But the plural of underlying potà [floor] differs: it is potà for the Schaffhausen dialects, but potò in Kesswil.

This is where rule ordering comes in: in the Schaffhausen dialects, umlaut applies first. The o’s of both underlying forms (pokà and potà) are umlauted in the plural, which leaves us with pokà and potà. Lowering is applied next, but neither form contains a licit input for this rule: it is only o that is lowered, never ò. The resulting surface forms after the application of both rules are therefore pokà and potà. In Kesswil, the rules apply in a different order: lowering takes place first. The o in the underlying pokà is not affected, as it is not in a lowering context. The o of the underlying potà is lowered, because it is followed by t, a coronal obstruent. Hence the input for the next rule are pokò and potò. Umlaut applies next, and it applies to both forms. This leaves us with pokò and potò as surface forms.

In the singular, there is no umlaut. Lowering is therefore the only rule that applies, which leaves us with pokò and potò for both the dialects of Schaffhausen and Kesswil. The data in (1) summarise this account.

1 I am grateful to Jonathan Kaye for comments on a previous version of this paper. All remaining errors are of course my own. I also wish to thank the Hungarian Scholarship Board for financial support.

2 See sections 4 and 5 for a more formal rule format.
Before I start isolating the problems with this apparent proof for the existence of rule ordering, I will need to clarify which dialects we are talking about.

(1) a. Schaffhausen

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>underlying</td>
<td>pokə</td>
<td>pokə+pl</td>
<td>potə</td>
<td>potə+pl</td>
</tr>
<tr>
<td>umlaut</td>
<td>–</td>
<td>pokə</td>
<td>–</td>
<td>potə</td>
</tr>
<tr>
<td>lowering</td>
<td>–</td>
<td>–</td>
<td>potə</td>
<td>–</td>
</tr>
<tr>
<td>surface</td>
<td>pokə</td>
<td>pokə</td>
<td>potə</td>
<td>potə</td>
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</tbody>
</table>

b. Kesswil

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
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<td>surface</td>
<td>pokə</td>
<td>pokə</td>
<td>potə</td>
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</tr>
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</table>

3 Clarification: the dialect of Schaffhausen

Kiparsky’s example is concerned with two dialects of North-Eastern Switzerland. One of them is the Upper Thurgovian dialect spoken in the village of Kesswil as described in Enderlin (1913). Although Enderlin reports some differences between the dialect of the older (his main source) and that of the younger generation, it is a reasonably homogeneous dialect. So far so good.

The other dialect is a bit more difficult to pin-point. Let me quote the three sentences Kiparsky (1968: 176) uses to specify that dialect:

(2) a. to introduce his data sample:

“Compare, in the Kanton of Schaffhausen”

b. to summarise his account of the data introduced above:

“This is the situation in some dialects on the northern fringe of Switzerland.”

c. to lead over to the discussion of the Kesswil dialect:

“I will take a dialect which in all relevant respects is identical to that of the Schaffhausen area.”

Leaving aside the question of what “all relevant respects” are, these quotes are not precise about which dialect Kiparsky is referring to. (a) suggests that the data is valid in the entire Kanton of Schaffhausen. (b) suggests that there are several dialects for which the data and their account fits, but it is not clear which dialects those are. (c) again suggests one single dialect in the area of Schaffhausen — it is not clear, however, whether this is the Kanton or the city of Schaffhausen.

It is obvious from various quotes of Kiparsky’s paper that many have actually misunderstood this: Koutsoudas et al. (1974) take it to mean the dialect of the city of Schaffhausen and, as a consequence, use a different source of data for their alternative approach (Stickelberger 1881). Needless to say, their approach does not hold for the dialect(s) Kiparsky actually referred to. Kenstowicz (1996: 22) refers to this dialect as “the Schaffhausen dialect”, which is just as imprecise as the original — it is mere speculation whether he was aware of the inaccuracy of this term or not. Robinson (1976: 149) speaks of the “dialect of Schaffhausen” while summarising Kiparsky’s approach. Later, he makes a clear distinction between several dialects of the Kanton, but it seems that he was not sure which dialects Kiparsky actually referred to. He finds that the solution in Kiparsky (1968) “seems reasonable for the dialects he [Kiparsky, RS] studied”, but that there is a “phenomenon in a large part of the Schaffhausen dialect area” that Kiparsky had not noticed. The phenomenon he then describes covers all of the dialects Kiparsky could possibly have meant (and many more). Therefore Kiparsky’s solution is not “reasonable”, not even for the dialects he studied.

It is not by accident that so many people misunderstood what the dialect under scrutiny was. Technically speaking, there is no wrong information in Kiparsky’s paper, but crucial information is missing, which leaves the reader to guess. This is not good practice in scientific texts. Let me clarify this matter:

The data comes from “a time when each town, village, and hamlet had their own telltale features” (Kraehenmann 2003: 3). Wanner (1941) distinguishes between no less than 36 regional dialects in the Kanton of Schaffhausen. The data Kiparsky provides reflect the state of affairs in the municipalities Altorf, Bargen, Barzheim, Beggingen, Beringen, Bibern, Büttelnhardt, Gächlingen, Guntmadingen, Hofen, Lohn, Löningen, Oberhallau, Opfertshofen, Schleitheim, Siblingen, and Thayngen, but not in the other 19 dialects. The fact that they show the same distribution of o and œ does not mean that they form a homogeneous dialectal group. They differ in a variety of other aspects. As there is no further evidence to locate the dialect Kiparsky referred to, the best guess is that he was treating one or more of the ones mentioned above.

After having clarified this, I will continue by dissecting each of the two rules in turn.

4 The lowering rule

I will first discuss the lowering rule and turn to umlaut in the next section. Kiparsky gives the following rule for lowering (Kiparsky 1968: 178):

\[\text{3 Robinson finds that the ordering of the two rules as proposed by Kiparsky makes wrong predictions for large parts of the Kanton of Schaffhausen: umlaut of the sequence } œr \text{ is not, as predicted, } œr, \text{ but } œř. \text{ This is an interesting point that further weakens Kiparsky's argument, but a thorough discussion lies outside the scope of present paper.}

\[\text{4 The year of publication (1941) is somewhat misleading. The book was compiled and written by Georg Wanner, and almost ready for publication in 1922, when G. Wanner died. His son, Hans Wanner, published it posthumously in 1941.}\]
Robinson (1976) remarked that this rule is problematic for two reasons: “The rule as formulated would also lower long o, which would be incorrect – and would include the nasal n as an environment for the lowering, which some consultation of the handbooks (Enderlin (1911: 33), Wanner (1941: 58)) shows to be inappropriate for the dialects discussed by Kiparsky.” He gives a new version of the rule that solves the problems he mentions, and uses a revised set of features as well (Robinson 1976: 148), see below:

But even Robinson’s revised rule does not solve the biggest problem I see with this rule. The lowering rule, as any rule of this kind, makes a prediction: It states that all o are lowered to ɔ in the context given – before coronal obstruents and r. The rule therefore predicts that we find no sequence of a closed o followed by either a coronal obstruent or r. If we do find such a sequence, the rule is wrong. It should be easy to test the validity of the rule by simply looking at the data. Unfortunately, the amount of data available for either dialect is very limited. As I have mentioned in the introduction, the only sources available are Wanner (1941) for Schaffhausen and Enderlin (1913) for Kesswil. Both monographs follow the same structure: they are basically an inventory of sound correspondences between Middle High German and the dialect under scrutiny. Besides generalisations over sound changes they often also provide a number of words that do not follow the general pattern. For o and ɔ Wanner (1941: 28) lists the following:

Although not much, this is evidence against the lowering rule. A wider sample of data would probably reveal more words of this type. For Kesswil, Enderlin (1913: 33) gives the following examples:

In later sections of the book there are more words with closed o where an open ɔ would be expected according to Kiparsky’s lowering rule. I have listed some of these in (7) below (Enderlin 1913: 36):

Again, a better knowledge of the dialect would probably reveal more examples. Unfortunately we are not able to obtain more data from the dialects mentioned. Yet, there is hope. The dialects of Kesswil and Schaffhausen belong to a group of dialects called Ostschweizerdeutsch (East Swiss German), together with Lower Thurgovian (Kesswil belongs in the Upper Thurgovian group), St. Gallen, Toggenburg and Appenzell (cf. e.g. Kraehenmann 2003). Interestingly, the areas where the Upper Thurgovian and Schaffhausen dialects are spoken are not adjacent (contrary to Kiparsky p. 178), but separated by the Lower Thurgovian area. It is reasonable to suggest that data from a Lower Thurgovian dialect could be used to support what we have found so far. Fortunately my native dialect belongs to the Lower Thurgovian dialect group. The following data from my dialect supports the view we have gained above: both closed o (cf. a.) and open ɔ (cf. b.) can co-occur with coronal obstruents and even with r.  

These additional data show clearly that the lowering rule (neither Kiparsky’s nor Robinson’s version) does not reflect the facts accurately: it makes wrong predictions and is therefore factually wrong. In the next section, we will see that the umlaut rule
suffers problems that are just as severe.

5 The umlaut rule

With the umlaut rule, there are several problems. During the discussion of the Swiss German data, Kiparsky does not explicitly give a rule for umlaut. Instead, he references a rule that has been proposed earlier in the same paper during the discussion of umlaut in the Low German dialect of Prignitz, given in (9) below. A first, minor issue is that Swiss German belongs to the Upper German dialect family, which are at the opposite end of the dialect continuum. Using the same rule for dialects of two distinct dialect families without even a comment is questionable.

(9) Umlaut rule for Prignitz (Low German)

V → [-back] / …

However, looking at the rule more closely reveals problems that are, by far, more important than this. I will first discuss the problems concerning the context of this rule, then the one concerning the proposed phonological description.

5.1 The context of the rule

The most noticeable fact about this rule is its missing context. Kiparsky notes: “I leave open here the question of what exactly the environment of umlauting in modern German is, which is irrelevant for present purposes.” As irrelevant as the context of this rule might seem to Kiparsky, it is very important for two reasons, a more general one and one specific to this rule.

In general terms, a rule without a context is not falsifiable. As we have seen in the lowering rule above, a rule makes clear predictions. The rule A → B / C ___ D predicts that we will find no sequences CAD in the language, but only CBD. It is easy to see whether the rule is correct or not, simply by looking at the data: If we find the sequence CAD, the rule is wrong. The umlaut rule, as it stands, does not make such predictions, because it lacks a context. It is therefore impossible to test it against a body of data: we do not know what sequence would render the rule wrong. The rule, as it stands, is not falsifiable.

There is an additional reason why the context is important – specifically for this rule: contrary to what the whole example including this rule suggests, umlaut is not phonological, and cannot be described by a phonological rule. It is impossible to describe the context in which umlaut occurs in phonological terms. Kiparsky does not mention this, to the contrary: he claims that the rule given in (9) above is a simplification to the rule he gave for Old High German, quoted here as (10):

(10) \[
\begin{align*}
V & \to [-long] / \to [-low] / \_ C _ {0i}
\end{align*}
\]

The parts to the left of the slash in (9) are obviously simplified vis-à-vis those of rule (10), because the angled brackets are no longer present. But simplification suggests that the context is simplified as well, or at least not substantially more complex. However, umlaut occurs in certain morphological contexts, but this does not mean that these contexts always trigger umlaut. It is not possible to predict whether a certain word will be umlauted in a given context or not. Umlaut is lexicalised rather than derived, as I have argued in Sutter (2012; cf. also Pöchtrager and Kaye 2011a).

5.2 The phonological description of the rule

I have stated above that a rule without context is not verifiable. Despite of this I will show in what follows that the phonological description as proposed by Kiparsky is wrong. This is possible in this case because it is well-known what kind of changes umlaut is supposed to cover.

Take the following set of words in singular and plural that show umlauted (short) vowels in the plural forms. These data are from my native dialect, but the relevant facts are the same across the dialects.

(11) | Singular | Plural | Gloss |
--- | --- | --- |
haunt | hunt | [hand] |
volf | volf | [wolf] |
xwolpf | xwolpf | [button] |
hunt | hyn | [dog] |
paum | pɔim | [tree] |

All of these changes are commonly subsumed under the term umlaut. Depending on the theory used, the first four of them could be described by the change Kiparsky proposed (and that has been assumed by others as well): a vowel becomes [-back]. But this is not true for the last line: /i/ cannot be described as a “less back” or “more front” version of /u/. Wiese (1996: 122, based on Lessen Kloecke 1982 and Hall 1992) has proposed a solution to this problem by giving the umlauted version of /au/ as /ɔy/. The claim is that the /a/ part of /au/ is umlauted to /u/, while an independent rule takes care of the subsequent rounding of /a/ to /y/ before /y/ (cf. (12) below).

(12) | underlying | umlaut | rounding |
--- | --- | --- |
/au/ | /u/ → /y/ | /a/ → / /y/ |

The problem with this solution is that it does not properly reflect the data: the plural of /paum/ [tree] is not /pɔym/, but /pɔim/.

The umlaut rule has to be rejected as wrong for two reasons: first, the missing context renders the rule unverifiable and suggests that it is a phonological context that is missing. Second, the description of the rule is wrong, because it is not able to capture everything that is usually understood under the term umlaut.
6 Conclusion

In this paper, I have shown that both rules that Kiparsky proposed for Swiss German are factually wrong. One of the rules (lowering) simply does not comply with the facts: it predicts that all ə should be lowered to ɔ in a certain environment. This is not what we find: for both dialects Kiparsky mentioned, we find that both ə or ɔ can occur in coronal environments, where lowering is expected to take place. These findings are supported by additional data from a Lower Thurgovian dialect that is very similar to both dialects of Kiparsky’s example. Robinson (1976) noted that the rule proposed by Kiparsky also includes long vowels as possible inputs and ə as a possible context, although he was only referring to short vowels in the context of obstruents (“true consonants”). This is an inaccuracy on Kiparsky’s part, but even Robinson’s reformulated rule does not fare any better concerning the data.

The other rule, umlaut, is problematic on three accounts. First, it does not give a context (Kiparsky deemed it irrelevant), and therefore it is not verifiable. Second, the context of umlaut cannot be phonologically defined, because umlaut is completely lexicalised. Third, the change proposed in the rule does not cover the changes that are usually subsumed under the term umlaut: the change from au to ɔ cannot be seen as fronting (or adding a [-back] feature)

Two inaccuracies where pointed out: one of the dialects treated is not properly defined, because umlaut is completely lexicalised. Third, the change proposed in the rule does not cover the changes that are usually subsumed under the term umlaut: the change from au to ɔ cannot be seen as fronting (or adding a [-back] feature).

Both the rule for lowering and the umlaut rule are, as I have shown, wrong. Where there are no rules, there can be no question of ordering them. Kiparsky’s example from Swiss German dialects, therefore, cannot be taken as a proof of the necessity of rule ordering. With this, another purported proof of the necessity of rule ordering in phonology has been debunked (after Kaye 1990, 2012 for Canadian Raising). This takes away the basis of the claim by Bromberger and Halle (1989) that phonology is fundamentally different from syntax. It is high time to rethink the relationship between syntax and phonology.

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