

Edited by

Ludmila Veselovská
and Markéta Janebová

Nominal Structures: All in Complex DPs

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Edited by Ludmila Veselovská and Markéta Janebová

Palacký University
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Nominal Structures: All in Complex DPs

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Therefore, first and foremost, the editors would like to thank all the authors of the individual chapters for both their enthusiastic participation in the conference and their cooperation in the editorial process. Thanks to their generous efforts, the monograph more accurately reflects a coherent and agreed-on area of subject matter: a formal linguistic description of the structural projections of nouns.

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Preface: The Common Ground

Ludmila Veselovská

This monograph provides an interesting collection of several empirical studies of nominal projections in a number of languages, mostly but not only Slavic, concentrating on the functional category domain that encompasses a noun phrase. The scope of the book includes applying all levels of linguistic analysis to the languages concerned, and we believe that it faithfully mirrors and expands the leading ideas of current research in the given area.

The authors who are contributors to this volume have been inspired by their meeting at the OLINCO 2013 conference in Olomouc, Czech Republic, where they found out that their contributions share a similar theme – namely, an interest in the structure of nominal projections – its characteristics, properties and the properties of its parts. Most of the ideas that appear in this monograph were therefore originally presented in the form of talks or posters at the conference, and as far as possible the chapter titles reflect the original titles. However, many of the conference papers and especially posters have been enlarged and transformed into written versions by their authors, so as to conform to the scope of this monograph and tailor the individual contributions to the common theme. In addition, most of the languages described here are Slavic, which represents another unifying characteristic of this book. The cross-linguistic examples and paradigms, especially in some Slavic languages, which are collected in this monograph are often original and deserving of serious attention in future research. The individual chapters provide valuable sets of empirical data and generalizations which will enrich and stimulate analyses of these topics in any formal theoretical frameworks of the future.

As mentioned above, the unifying theme of this monograph is the empirical linguistic analysis of nominal phrases and their parts. Compared with clausal structures, which, in spite of their language-specific realizations, are widely assumed to share the same basic general functional domains, the presence of grammatical categories accompanying the lexical noun is still assumed to be subject to fundamental cross-language variation. The variety concerns not only the overall structure but also the characteristics of individual functional elements which appear inside the nominal phrase.

In spite of possible distinctions in individual analyses, all the discussions of the empirically attested phenomena in this monograph either assume or argue in favor of the presence of a functional domain above the nominal lexical head, which is equivalent to what is generally termed the English DP. The arguments in favor of such a “universal DP hypothesis” use a range of data and evidence in several linguistic domains. The initial chapters in Section I: Introduction (Chapters 1 and 2)

of this monograph concentrate principally on a general summary of arguments in favor of a generalized DP hypothesis. These chapters provide a kind of introduction to the topic, providing a list of the most frequent arguments and the characteristics of the surrounding discourse.

The next large section is devoted to some specific properties of the elements which plausibly represent lexical entries in the functional domain of nominal projections. In Section II: Functional Heads (Chapters 3–8) the properties and distribution of specific lexical and grammatical elements – e.g., demonstratives, possessives, and quantifiers – are analyzed in detail, including from a diachronic perspective. The cross-linguistic and universal nature of these phenomena is supported by the relevant discussion of the quantifiers that are possible in non-Slavic Korean.

In the final section, Section III: Left Periphery (Chapters 9–10), the characteristics of the functional nominal domain are discussed, especially with respect to the transformations motivated by specific factors such as Information Structure. In this section the Slavic phenomena are compared with a parallel in Portuguese to show the general nature of the syntactic processes occurring inside nominal projections.

In general, the monograph mainly deals with data that relate to Slavic languages, which demonstrate some particular properties when compared with, for example, Germanic or Romance nominals. The specific Slavic features include a rich nominal morphology with overt inflectional agreement inside the phrasal projection, for which there are not many equally rich counterparts in other Indo-European languages. This morphology, if properly analyzed, could well provide valuable insights into the more abstract and general notion of agreement systems. The same languages, however, usually do not have articles, i.e., free functional (inflectional) morphemes related to definiteness. This correlation certainly merits theoretical analysis, and some of the chapters touch on the topic in an original way.

Another specific property of the Slavic languages which is referred to most frequently (especially in the generative linguistic literature) is the penetrability of a complex Slavic nominal phrase. In many cases, these languages allow extractions of modifiers and their movement to a specific (usually initial) position. This fronting can plausibly be related to Information Structure factors (such as context-prominence, contrastive stress, etc.) but at the same time it may signal some fundamental structural distinction among nominal phrases cross-linguistically. This monograph, however, apart from the initial chapters, does not address these clausal patterns in much detail, concentrating instead on reorderings triggered by possible Information Structure principles applying inside a nominal complex. The more general characteristics of the phenomena, which are not only Slavic, are suggested by several references to more detailed studies of languages which are not within the same typological group, e.g., Korean and Chinese, in Chapters 5 and 8 respectively, or Portuguese in Chapter 10.

The domain of semantics is discussed in Chapters 3 and especially 4, although such data are presented together with their specific interpretation in all parts of the monograph. Both diachrony and synchrony are mentioned, with quantifiers, among others, to explain their characteristics and to argue in favor of specific properties of the lexical entries of functional categories in the nominal complex.

Data and arguments referring to morphology are also scattered throughout the monograph, and they present an especially important type of argumentation. A close relation between overt morphology and underlying syntax is not yet generally accepted, although for many languages (similar to those Slavic ones discussed here) it can represent a very valuable source of data. The authors of this monograph share the strong opinion that morphology is a signal of structural relations and does reflect syntactic phenomena. Trying to find out the general principles of this relation is thus a research program worth pursuing.

As for the **methodology** applied in this monograph, recent formal approaches (both functionalist and generative) typically present themselves as returning to the empirical concerns of traditional grammar, and at the moment they provide a wide range of plausible frameworks. In spite of the fact that most of the analyses in this monograph can be said to be broadly generative, the theory underlying the analyses is not restricted to one specific stage of the development of one specific theoretical framework, and it represents instead a wide-ranging formal approach. This theoretical variety is the reason why the editors of the monograph decided to respect the individual orthographic rules applied to terminology, including the abbreviations, which are explained throughout the text in the relevant chapters.

However, in spite of their terminological and orthographic variety, all the analyses here are consistent in the main underlying assumption that human language is a system which can and should be studied by applying scientific methods, with the result of acquiring some descriptively adequate and generalized hypotheses that are as explanatory as possible. The authors share the belief that linguistics is an autonomous science; empirical data and argumentation are the center of their attention. Most of the analyses share the belief that the daily unconscious use of one's native grammar underlies all human thinking and calculation.

Section One

Introduction

Chapter One

Ludmila Veselovská

The Universal DP Analysis in Articleless Languages: A Case Study in Czech

1. Is there a Functional Head above NP? Which One?

The DP hypothesis proposed by Abney (1987) was since its origin intended as plausibly universal, in keeping with prevailing beliefs within the Principles and Parameters framework of the 1980s.¹ However, as soon as it was generally accepted for languages like English, a discussion started as to whether the same DP structure is the best way to also describe languages with no articles, e.g., Slavic. Already within the Barriers framework, Corver (1990) proposed parametric variation in the D domain, claiming that a missing D projection is the reason for the transparency of Slavic nominal phrases with respect to the extraction of focused adjectival modifiers.²

At the same time, however, other authors argued that an article is not the exclusive lexical entry representing the Determiner head (recall that Abney did not make

1 The study was made with the support of the ESF grant CZ.1.07/2.3.00/20.0061 (Language Diversity and Communication) financed by the European Union and the Czech Republic.

2 The restriction on so-called “left branch extractions” was already labeled the “Left Branch Condition” in Ross (1967). Corver’s (1990) dissertation reinterprets it as a constraint forced by the overt D which projects a minimality barrier and blocks the extraction of prenominal material. However, Veselovská (1995) proposes an alternative analysis for the extractions in terms of remnant movement avoiding the DP/PP split. This analysis does not require a weakening of the universal DP hypothesis. More recently, Bašić (2004) and Petrović (2011) argue in favor of similar analyses in Serbian and other Slavic languages. All remnant movement analyses are motivated by the need to remove non-focused material out of the DP before the remnant is fronted to the initial Focus Phrase. In this way extraction is related to Information structure, which typically results in re-ordering of sentence constituents in the relevant Slavic languages. This controversial phenomenon is not discussed in more detail in the present monograph.

many claims concerning English articles) and also that Slavic languages show properties which are best explained using the concept of a universal DP. The theoretical implementation of functional heads also became more refined and to deny their existence in some group of languages seems more and more difficult. The discussion became gradually less bi-polar, and concentrated more on the feature content and characteristics of the D projection, also arguing in favor of other or alternative functional heads in the extended projection of a lexical Noun.

The following table lists, on the left, proponents of a universal DP structure in Slavic – i.e., those who propose a universal functional head on top of the NP projection. The right column lists authors who believe in a more language specific (parametrized) approach and propose that the missing DP is also able to explain some of the specific properties of the Slavic languages with no articles.³

(1) Universal vs. parametrized nominal projection

	Universal QP / DP / NP structure	Parametrized QP / DP / NP structure
Czech	Veselovská (1995, 2001)	Corver (1990)
Russian	Pereltsvaig (2007, 2013)	Bošković (2005, 2008, 2009)
Serbo-Croatian	Progovac (1998), Bašić (2004), Caruso (2011, 2012)	Zlatić (1997, 1998)
Polish	Rutkowski (2002)	

In this chapter, I summarize the arguments which in my view show that the universal DP hypothesis should be accepted for Czech. Most of these data have already been shown for some Slavic languages, but not been related to Czech or demonstrated in more detail with Czech data. Data supporting the DP hypothesis for Czech can be taken from all linguistic domains.

2. Interpretation of the Nominal Complex

The presence of D is not always discussed with a connection to some very specific interpretation. It is in fact related to the more basic semantic properties of the nominal category – namely its ability to become an argument carrying a Theta Role of a verbal predicate. Longobardi (1994) claims that only DPs can be interpreted as arguments, relating thus the presence of the DP layer to a more semantic version of the Case Filter. Borer (2005) also states that only DPs have referential indices and can be interpreted as arguments.

³ The latter claim, the so called “DP/NP Parameter,” is repeated mainly in work by Željko Bošković (see Table 1). For a more universal treatment of the nominal projection, also containing, apart from the D category, a string of other functional heads, see, e.g., Alexiadou (2001) and many works cited there.

Even more explicit claims about the importance of the DP projection for the semantics of the noun can be found in Beavers (2003, 3–4). The author proposes a “Nominal Phrase Semantic Well-Formedness Condition” which requires all well-formed noun phrases to have both D-Semantics (i.e., features of quantification, [in] definiteness, and genericity) and N-Semantics (i.e., attributive/restrictive semantics, restriction set, etc.).

The following example (2) shows that Czech articleless nouns like *chlapec* (“boy”) and *ryby* (“fish”) can serve as arguments as well as proper Nouns or pronouns in English.

- (2) (a) Chlapec/Marie/Ona/Každý miluje ryby /své_{REFL} rodiče.
 (b) *Boy/A boy/Mary/She/Everybody loves fish/his/her parents

Moreover, assuming a parallel structure for lexical and functional domains in VP/IP and NP/DP, we can also expect a kind of external argument in the high periphery of the nominal projection which would show properties of a structural subject, potentially a SPEC of a related functional head. In English those elements are possessives (pronouns and DPs marked with the morpheme *-s*). The following example (3b) shows that the Czech possessive is able to bind an anaphor as well as the English one. Having a referential set, it can serve as an external argument located in the domain above NP. The contrasted example (3c) demonstrates that adjectives do not have this property.⁴

- (3) (a) učitel_i věčně mluví o sobě_{i/*j}
 teacher_i permanently talks about himself_{i/*j}
- POSS (b) učitelovo_i věčné mluvení o sobě_{i/*j}
 teacher_s_i permanent talking about himself_{i/*j}
- ADJ (c) učitelské_i věčné mluvení o sobě_{*i/j}
 teacher_{ADJ-i} permanent talking about ??self_{*i/j}

I therefore conclude that the presence of an overt article is not required for a nominal entry to be analyzed as referential, quantifiable, argumental and able to bind an anaphor. Thus Czech nominal phrases should be analyzed as containing a functional projection DP, in spite of the fact that the D head does not host an overt free morpheme.

⁴ Some credit for these data belongs to Petr Karlík (personal communication).

3. Lexical Entries in the Functional Domain above N

Any descriptively adequate grammar discussing the elements appearing in the domain of a head noun distinguishes several groups of entries, each of which shows specific characteristics. In a generative framework the first truly detailed description of English can be found in Jackendoff (1977). The high periphery of his NP contained three separate functional layers hosting Demonstratives, Quantifiers, Numerals, and Possessives. In Abney (1987) this domain was labeled “functional” and the list of possible entries was restricted to “closed class” elements (the only apparent exceptions – the possessive DPs – were located in the SPEC of the functional head). The functional domain is distinct from the following lexical domain, which typically contains open class elements (mostly adjectives), as well as of course the head nouns.⁵

3.1 Morphology (Functional vs. Lexical)

The functional and lexical domains preceding the head noun in Czech contain the same range of lexical entries as the English one. As for their morphology, the Czech open class adjectives have “adjectival” morphology, with a typical long vowel paradigm. In contrast to the adjectival agreement, the functional field of closed class elements in Czech typically shows a (short vowel) “pronominal” morphology with Demonstratives and some Qs.⁶

Other quantifiers, e.g., *mnoho/málo* (“much/few”), *pět* (“five”), *její* (“her”), and some possessives, e.g., *moje/tvoje* (“my/your”) have rather fossilized and idiosyncratic morphology which is also distinct from the adjectival long vowel paradigm. The following table shows examples of standard adjectival (Case) agreement in Czech compared with a possessive and a general quantifier.

(4) Comparing adjectival (long), pronominal (short), and fossilized (numeral) paradigms

[MASC, SINGULAR]	ADJ: <i>mladý</i> (“young”)	PRON: <i>můj</i> (“my”)	Q: <i>mnoho</i> (“many/much”)
Nominative	<i>mlad-ý</i>	<i>můj</i>	<i>mnoh-o</i>
Accusative	<i>mlad-é-ho</i>	<i>moj-e-ho</i>	<i>mnoh-o</i>
Genitive	<i>mlad-é-ho</i>	<i>moj-e-ho</i>	<i>mnoh-a</i>
Dative	<i>mlad-é-mu</i>	<i>moj-e-mu</i>	<i>mnoh-a</i>
Locative	<i>mlad-é-m</i>	<i>moj-e-m</i>	<i>mnoh-a</i>
Instrumental	<i>mlad-ý-m</i>	<i>moj-i-m</i>	<i>mnoh-a</i>
Vocative	<i>mlad-ý</i>	<i>můj</i>	<i>mnoh-o</i>

5 Phonetic realization of the Czech functional demonstrative *ten* (“this”) in terms of its informational relevance is discussed in Chapter 6 of the present monograph.

6 For a detailed generative description of the adjectival paradigm in languages with rich agreement see Emonds (2012). Contrastive analysis based on typological distinctions between synthetic Czech and analytic Chinese is provided in Chapter 8 of the present monograph for adjectival morphology in a language acquisition framework.

Given that the lexical entries show a distinct type of agreement morphology, it is reasonable to assume that their host category or the nature of the agreement process are structurally distinct, and that the possessive pronouns are functional.

3.2 Head-Like Properties

In the preceding section I compared agreement paradigms of Czech adjectives, quantifiers, and pronominal elements. All of them, however, do agree and do not show many independent head-like properties. This should not be surprising given that Czech is a highly inflected synthetic language, and as such it prefers to realize functional heads using bound morphology. To look for instantiations of a free head in the D domain is therefore more difficult.

We can still mention the selectional restrictions imposed on the nominal head by quantifiers. The example below shows that matching is obligatory, and assuming that it is only a head which can select its complements, the unacceptability suggests that there is a selecting head in the structure.

(5) (a) *jeden chlapci
 *a/one boys

(b) *každí chlapci
 *every boys

The same head-like property is signaled by other quantifiers which are able to assign Case to the following nominal complex. Assuming that Genitive Case assignment is also a property of a head, those structures must contain another head apart from the lexical noun in (6a).⁷

(6) (a) Přišlo/ *li mnoho/pět chlapců.
 arrived_{SG/*PL} many/five boys_{GEN}

(b) Přišli/ *lo všichni/čtyři chlapci.
 arrived_{PL/*SG} all/four boys_{NOM}

The above examples mention quantifiers which are not typically located inside the DP projection. Since Giusti (1992) quantifiers are usually analyzed as heads

⁷ For the discussion and analysis of the genitives and partitives following some Czech (or Slavic) quantifiers and numerals see Veselovská (2001), Caha (2007) and many others cited in these studies. A diachronic process of grammaticalization (“Numeralization”) of numeric expressions can be found also here in Chapter 3 for Polish higher numerals. The author discusses in detail also the loss of explicit nominal inflection which is visible for Czech in Table (4) above.

separate from D. However, there are signals in Czech of head-like elements inside the nominal complex which are not related to quantifiers. These signals are again best observed looking at the agreement morphology and are illustrated below. In (7) we can see an example of the split agreement pattern with genderless pronouns. Here it is *vy* (“you-PL”) used as a polite form of addressing a superordinate or unknown individual. Notice that the verb consists of two separate heads – Aux *jste* (“are_{2-PL}”) and V *přišel* (“arrived_{MASC-SG}”) and each of them shows distinct agreement: Aux agrees with the formally plural pronoun, while the participial V shows a semantically correct singular (including a gender not present on the pronoun at all).

- (7) Vy (pane profesore) jste přišel včas.
 you_{2-PL} (Mr. professor_{MASC-SG}) Aux_{2-PL} arrive_{MASC-SG} on-time
 “You, professor, arrived on time.”

Trying to avoid any unmotivated enrichment or division of the feature content reflected in the agreement, I argue in Veselovská (2002) that the double agreement pattern in (7) means the presence of two phi-feature sources or domains. Gender is one of the features in the domain related to the lexical category N (standardly zero after a pronoun) and this domain matches with a lexical V. The other domain belongs to the functional category D (i.e., the pronoun) which matches with the functional category I, represented by Aux. Agreement within lexical domains is thus separated from agreement on the level of functional domains. In other words, without a reference to an existing functional domain (head) present in an extended projection of Czech nouns, the above data would remain unexplained.

3.3 N-to-D Movement (Head-to-Head)

The role of the D head in the nominal projection has also been discussed from the perspective of possible head movement inside the nominal projection, as in, e.g., Cinque (1994) and Longobardi (1994). The D head is an assumed landing site for (some of) the nominal elements – namely those appearing in front of adjective premodifiers. In Czech we can find at least two pronouns which are fronted. They are *někdo* (“somebody”) and *něco* (“something”) illustrated in (8c–d) below. Compare the ordering of these expressions with the standard position of the Czech head nouns *muž* (“man”) and *město* (“city”) in the (8a–b) examples.

- (8) (a) ten velký muž
 the_{NOM} tall_{NOM} man_{NOM}
 “the big man”

- (b) to velké **město**
 the_{NOM} big_{NOM} city_{NOM}
 “the big city”
- (c) **někdo**_i velký - t_i-
 someone_{NOM} big_{NOM}
 “somebody big”
- (d) **něco**_i velk-é-**ho** - t_i-
 something_{NOM} big_{GEN}
 “something big”

In Veselovská (2003) I analyze the genitive Case assigned by the inanimate *něco* (“something”) in (8d), which is another property that supports the latter’s head status. As long as fronted pronominals need a head landing site at the left periphery of the nominal projection, the DP allows us to analyze these structures as examples of N-to-D Movement.

In Chapters 9 and 11 of the present monograph, movements of phrasal constituents are discussed and analyzed as fronting motivated by a topic feature (Chapter 9) and a *wh*-/focus feature (Chapter 11). Both these analyses are based on the presence of a functional domain at the left periphery of the nominal complex.

4. Comparing Distribution: The Prenominal Field of English and Czech

Looking at the ordering of elements in the field preceding the head noun, with the exception some minor discrepancies, the Czech repertory is fully comparable to English. As in English, the position of adjective premodifiers (in both languages, apart from Romance patterns and idiosyncratic lexical entries) depends on their structural complexity obeying the Left Branch Restriction. The following English and Czech examples in (9a, c) show light APs (bare or premodified) which precede the head Noun, and in (9b, d) heavy APs (postmodified) which in both languages must standardly follow the head Noun.⁸

(9) Pre-/Post-nominal position for English and Czech APs

- (a) (**velmi**) **vysoký** **muž**
 (very) tall man

⁸ For a description of the Left Branch Restriction see Emonds (1976). A detailed discussion of the characteristics of premodifying APs in contrast with those that appear after the head noun see also, in a more traditional framework, Sproat and Shih (1991) who introduce the terms “light” versus “heavy” APs. For space reasons I do not discuss here examples with the complex AP divided into parts.

- (b) * (**velmi**) **věrný** **své ženě** **muž**
 * (very) faithful to his wife man
- (c) ?? **muž** (**velmi**) **vysoký**
 ?? man (very) tall
- (d) **muž** (**velmi**) **věrný** **své ženě**
 man (very) faithful to his wife

4.1 Czech National Corpus

The Determiner field containing overt lexical entries is subject to specific word order constraints as well. For English even the traditional descriptive grammar manuals divide the prenominal attributes into determiners which are peripheral and exhibit fixed ordering, and adjectival attributes, which follow the determiners and show a less strict orderings. The Czech word order is said to be free and asking the speakers for preferences, one finds it very difficult to eliminate phonetic aspects related to topic-focus distinctions. Clearer data can, however, be obtained from corpora.

The following table (10) gives the numbers of chosen elements: demonstratives, possessives and light APs appearing pre-nominally and post-nominally.⁹ The data were taken from classical Czech literature of the 19th and 20th centuries, and they show that in spite of what the informants may believe, not more than 6.5% of the relevant entries were postnominal.¹⁰ Neither of the 19th-century authors (Neruda, Němcová), who are known to use more archaic and marked styles, use the post-nominal position more frequently than the prenominal one with any of the tested lexical items. The amount of marked orderings in (10) is fully comparable with English as given in, e.g., Scott (2002) or with the Russian corpora data summarized in Pereltsvaig (2007).¹¹

9 The examples were as follows: ADJ, e.g., *velká hora* (“big mountain”), *strašně velká hora* (“extremely big mountain”); DET, demonstratives, pronominals (without POSS), numerals, quantifiers; POSS, possessives, e.g., *můj/tvůj* (“my/your”), N-poss containing *-ův/-in*, e.g. *Jeníkův/maminčin* (“John’s/mother’s”); post-nominal, does not include postmodified (heavy) APs, i.e., [_{AP} A + PP/VP/clause].

10 The names of the authors in the leftmost column in (10) refer to the books (and journals including a web article) which in the bibliography are listed under Corpora.

11 Concentrating on adjectives, Scott (2002) claims a 10–11% tolerance for the marked orderings with English speakers. In Russian (including corpora) Pereltsvaig (2007) found a comparable 3–10% tolerance for word orders which do not follow the order predicted in the structure.

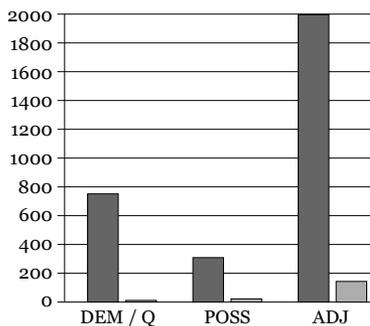
(10) Table: ratio for pre-/post-N modification: DET / Poss / Adj

author	pre-nominal			post-nominal		
	DET / Q	POSS	ADJ	DET / Q	POSS	ADJ
Čapek	53	20	200	0	4	21
Kvasnička	39	13	100	2	0	3
Michal	91	35	200	0	1	16
Motýl	30	4	100	0	0	1
Němcová	88	40	200	5	4	22
Neruda	53	22	200	7	17	57
Olbracht	97	35	200	1	3	13
Pavlovská	67	49	200	0	0	5
Šabach	135	52	200	0	1	1
Viewegh	73	42	200	0	0	8
Votrubová	19	0	100	0	0	2
web item	12	8	100	0	0	2
Σ	757	320	2000	15	30	151
				2%	9.5%	7.5%
pre-N : post-N	50:1	10:1	13:1	Σ 3,077:196 = 15:1 6.4% post-N		

Notice as well that in Table (10), Czech demonstratives and quantifiers, which are the best candidates for the elements located in or around the functional Determiner projection, exhibit more strict ordering than possessives and adjectives, which are perhaps more sensitive to pragmatic phenomena and appear more likely in marked orders forced by topic-focus features.

The summaries of the above results are repeated schematically in the following graph (11). The scheme compares the pre-nominal (dark column) and post-nominal (light column) positions of Czech demonstratives, possessives and light APs.

(11) Pre- vs. Post N modification in Czech NP/DP



5. Functional Domains (Distribution)

In the formal generative framework the distribution of individual lexical entries within the pronominal field of the NP/DP has been studied repeatedly in both English and many other languages. Ordering distinctions within the functional and lexical domains including the Slavic languages have already been described in Cardinaletti (1998) and Schoorlemmer (1998); adjectival premodifiers are discussed in detail by Cinque (1994).

The following Table (12) provides results of a search comparing the ordering of demonstratives and adjectives in the Synchronic Representative Corpus (Syn2010). The corpus is a part of the Czech National Corpus, and it has 121,667,413 positions. The first line gives results for the combination of the most frequent Czech demonstrative *to* (“the/this” = Dem1) and adjective *vysoký* (“tall/high” = Adj1). The marked ordering with AP preceding the demonstrative was attested in only 0.3%. The second line in (12) gives the results for all the demonstratives (DEM) and all adjectives (ADJ) based on the tagging within the corpus. The marked word order was attested in only 0.8% of the data.

(12) Czech National Corpus: Syn2010

type	number	lemmas		type	number	lemmas
Dem1 + Adj1	363 ¹²	<i>vysoký</i> + <i>to</i> + <i>N</i> (“tall + the”)	363:1 0.3%	Adj1 + Dem	1 ¹³	<i>to</i> + <i>vysoký</i> + <i>N</i> (“the + tall”)
DEM + ADJ	104,328 ¹⁴	Dem + Adj	131:1 0.8%	ADJ + DEM	795 ¹⁵	Adj + Dem

The numbers and ratios in (12) show that the Czech lexical entries, which can be related to the functional domain, precede the attributive adjectives in a rather strict ordering. The violation can be perceived as ungrammaticality, which makes the Czech word order fully comparable to English.

12 Total findings: 456 (3.75 i.p.m.; with respect to (w.r.t.) the corpus) | Average Reduced Frequency (ARF): 277. Sorted out 363 relevant (from which 211 are in the superlative).

13 Total findings 3, from which 1 example is relevant.

14 Total findings: 112,909. From 500 random samples, there were 462 (92.4%) relevant; i.e., there were 104,328 relevant examples. There was not a single example of the combination *to/takové* + *celé* + *N* (“whole + the/this + N”) or *takový* + *další/mnohý* + *N* (“next + such/numerous + N”).

15 Total findings: 5,034. From 500 random samples, there were 384 (76.8%) relevant examples (from which there were 290 (75.5%) combinations *celé* + *to/takové* + *N* (“whole + Dem + N”) and 15 of *další/mnohý* + *takový* + *N* (“next/numerous + Dem + N”). Excluding those, only 79 examples were relevant, i.e., 15.8% from 5,034, which represents 795 examples (excluding the combinations mentioned above).

5.1 The “D(P)” / Functional Domain: Distribution of Entries

In the preceding section I demonstrated the sharp distinction between the ordering of the lexical entries belonging to the projection of a lexical Noun (mostly adjectives) and the entries belonging to the determiner’s projection. In the following paragraphs I am going to show the constraints on the ordering of elements within the determiner field.

5.2 Quantifiers and Demonstratives

Already in his main syntactic study dealing with English data, Jackendoff (1977) worked with a 3-slot template of functional category in the field which today could be called the Determiner projection. He states that some elements are obligatory and that the unique central position contains articles as a typical entry. He also provides data showing typical lexical entries for fixed positions preceding and following the article (pre-D and post-D positions) – demonstrating specific Quantifiers (Q) and Numerals (Num). A brief summary of his data is given below in (13).

- (13) (a) half/all the four/many boys
 (b) a/the/some/my/Mary’s boy
 (c) (*many) the (*all) boys
 (d) *the my/*a some boy

Looking for a similar 3-slot template in Czech, the first clear distinction is in the lack of a unique central position occupied in English by articles and its alternates. The following example shows a noun with a range of potential determiners including a numeral, none of which is more obligatory than a lexical adjective *podezřelý* (“suspicious”).

- (14) Je tam (jeden) (takový) (nějaký) (jakýsi) (podezřelý) chlápek.
 is there (one) (this) (some) (any) (suspicious) guy
 “There is such a suspicious guy over there.”

On the other hand, looking at the order of quantifiers and numerals (so called pre- and post-determiners) with respect to demonstratives, there is not much of a variety. Although the examples below seem to suggest a kind of freedom among quantifiers and demonstratives, the interpretation described below varies with respect to each ordering and the alternates plausibly have distinct structures. The unmarked option is (15a), in which the bold demonstrative and possessive appear

in between the general quantifier *všichni* (“all”) and in front of the cardinal *čtyři* (“four”), which is, as for the order of the quantifiers, the unmarked word order in English as well.¹⁶

- (15) (a) *všichni* (**ti vaši**) *čtyři* *chlapci*
 all (the/your) four boys
 “all the four boys of yours”
- (b) *všichni/čtyři* (**ti vaši**) *chlapci*
- (c) (**ti vaši**) *všichni/čtyři* *chlapci*

The following table (16) provides the corpus numbers supporting the unmarked characteristics of the English-like order in Czech. Searching for the ordering of Demonstratives (Dem), Quantifiers (Q) and Numerals (Num), the numbers show that the ordering as in (15a) – type A on the left in (16) – is a clearly more frequent combination than its opposite – type B on the right. The percentage of the occurrences of the non-English-like orderings is minimal – 0.5% for the combination Dem + Num and 3.0% for the combination of Q + Dem.

(16) Corpus: Syn2010

type A	found	lemmas	ratio of found	type B	found	lemmas
Dem+Num	205 ¹⁷	<i>ti+čtyři</i> (“the + four”) (+N)	200:1 0.5%	Num+Dem	1	<i>čtyři+ti</i> (“four+the”) (+N)
Q+Dem	3,775 ¹⁸	<i>všechno+to</i> (“all + the”) (+N)	31:1 3.0%	Dem+Q	120 ¹⁹	<i>to+všechno</i> (“the+all”) (+N)

The corpus data thus support the claim about the fixed position of the closest relative to article in Czech, in the central slot of the peripheral functional field, which also contains quantifiers and numerals.

16 The uniqueness of DET/POSS in English is not an issue in this example. For these data see the next sections, where the orderings in (15 b/c) are described in more detail.

17 Tokens: 286 (2.35 i.p.m.; w.r.t. the corpus) | ARF: 157. Sorted out 205 relevant findings.

18 Tokens: 3,852 examples. From 500 arbitrarily chosen there were 491 relevant examples, all of which were +N. I.e., 3,775 relevant findings, all of which were +N.

19 Tokens: 740 (6.08 i.p.m.; w.r.t. the corpus) | ARF: 417. Sorted out 556 relevant examples, from which 120 Dem + Q + N, 436 Dem + Q without N, from which 300 were *to vše(chno)* (“it + all”) without N.

5.3 Partitive versus Non-partitive Readings

In the example (15b/c) I demonstrated acceptable Czech examples of the ordering in which quantifiers and numerals preceded the demonstrative and possessive, mentioning the interpretative distinction between the unmarked order and these structures. Using the English translations, the following examples show that the distinction is in the quantifier scope.²⁰

When the demonstrative precedes the numeral the unit refers to one definite set consisting of a given number of individual items. In (17) below the definite set of examples has three or four members in both languages.

- (17) u těch tři anebo čtyř příkladů
 in those three or four examples
 “in those three or four examples” (the +DEF set = 3 or 4 items)

On the other hand, when the numeral precedes the demonstrative, the numeral counts (takes scope) over a closed set of definite elements. The example (18) does not state the number of the units within the set which is marked by the demonstrative as definite. It refers to only three or four items of a potentially larger set.

- (18) u tří anebo čtyř těch příkladů
 in [three or four those examples]_{GEN}
 “in three or four of those examples” (3 or 4 of the +DEF set)

In the English gloss of (18) I marked the genitive Case assigned by the Czech preposition *u* (“in”) and which appears on all agreeing elements inside the Czech nominal complex, suggesting a unified, single domain. The English translation, however, contains a preposition *of* not present in (17) above. A preposition signals a separate domain of the quantifier, which as a kind of head selects *of* as a head of PP. This “partitive” structure for English is described in detail in Jackendoff (1977, 1981). I propose that given a specific interpretation, and in spite of the uniform morphology, the Czech structure is equally complex, and contains at least two phrases.

5.4 Quantifiers, Demonstratives, and Possessives

As for the ordering between the optional but possibly multiple elements in Czech, which in English occupy the (obligatory and unique) Central Determiner slot, the example in (19) demonstrates the fixed order between demonstratives and

²⁰ An interesting account of plurality based on formal semantic theory is applied to semantic properties of some Polish nominal complexes in Chapter 4 of the present monograph.

possessives.²¹ The table in (20) gives corpus data to support the claim which was made in (19).²²

- (19) (a) *ti vaši chlapci*
 the your boys
- (b) **vaši ti chlapci*
 *your the boys

(20) Dem + Poss Orderings: Corpus: Syn2010

type A	found	lemmas		type B	found	lemmas
Dem + Poss	1,433 ²³	<i>ten + váš (+N)</i> “the +your (+N)”	0%	Poss + Dem	0	<i>váš + ten (+N)</i> “your + the (+N)”
DEM + POSS	11,641 ²⁴	Dem + Poss (+N)	466:1 0.2%	POSS + DEM	25 ²⁵	Poss + Dem (+N)

The fact that there is no tolerance for reordering between the functional categories at the left periphery of a complex noun phrase suggests the template-like characteristics of the field, which is typical for a string of functional heads.

Looking at the relative order of general quantifiers (Q) and cardinals (Num), each of which can appear either in front or after the Dem/Poss, we can see that if both are present, the order is fixed: universal quantifiers *všichni* (“all/both”) must precede the cardinals.²⁶

- (21) (a) **čtyři/tři všichni*
 *four/three all

21 A comparative descriptive study of the form and interpretation of Czech and English possessives can be found in Chapter 7. For more theoretical discussion see also Veselovská (2001). Some other Slavic (Russian) possessives and especially their equivalents are discussed and analyzed in terms of so-called Possessive Raising in, e.g., Zimmerling (2013).

22 The first line provides results of the search for a specific Demonstrative (Dem) and Possessive (Poss) *ti vaši* (“those your”) combined with a Numeral, the second line counts all Demonstratives (DEM) and Possessives (POSS) as tagged in the corpus. The ratio is given for the examples found and the percentage counts the occurrences of the unpredicted order.

23 Tokens: 1,433 i.p.m.: 11.78; w.r.t. the corpus | ARF: 603 |

24 Tokens: 11,641 i.p.m.: 95.68; w.r.t. the corpus | ARF: 5,661 |

25 Tokens: 39 i.p.m.: 0.32; w.r.t. the corpus | ARF: 18. 14 entries irrelevant.

26 For universal Qs the entries were: *všichni/oba* (“all/both”), for Numerals *tři/čtyři* (“three/four”)

- (b) všichni (ti/vaši) čtyři (?ti/vaši) chlapeci
 all (the/your) four (the/your) boys
- (c) *čtyři (ti/vaši) všichni (ti/vaši) chlapeci
 four (the/your) all (the/your)

Example (21a) shows that the Num + Q order is ungrammatical in Czech. (21b–c) demonstrate that when Q + Num co-occur with Dem/Poss, they appear in front of the Dem/Poss, or on the sides of the Dem/Poss combination. The corpus data supporting the generality of examples in (21) are provided in the table in (22), which shows the results of the search for combinations of quantifiers *všichni/oba* (“all/both”) and demonstratives/possessives *ti/vaši* (“those/your”) with generic numerals.

(22) Q + Dem + Poss Orderings: Corpus: Syn2010

type A	found	lemmas		type B	found	lemmas
Q+NUM	3,162 ²⁷	<i>všečen/oba</i> +Num (“all/both+Num”)	1,581:1 0.06%	NUM+Q	2	Num+ <i>všečen/oba</i> (“Num+all/both”)
Q+Dem/ Poss+Num	21 ²⁸	<i>všečen+ten/ váš</i> +Num (“all+the/ your+Num”)	0%	Num+Dem/ Poss+Q	0	Num+ <i>ten/ váš+všečen</i> (“Num+the/ your+all”)
Q+Num +Dem/Poss	2	<i>všečen+ Num + ten/váš</i> (“all+Num +the/ your”)	0%	Num+Q +Dem/Poss	0	Num+ <i>všečen+ten/váš</i> (“Num+the/ your+all”)

If Czech has a universal DP projection, which can be sister to another functional projection of Q, we can expect a hierarchy within the field of premodifiers that is similar to English. In Veselovská (forthcoming) I present corpus data supporting the universal semantic hierarchy of adjective premodifiers. The study searches for data in Czech national corpus to demonstrate that orderings inside Czech nominal complexes are as restricted as those in English (as in Scott 2002) and Russian (as in Pereltsvaig 2007) and the individual strings follow the same specific hierarchy. At the same time, the Czech data in this study fully confirm the striking distinction between the strict orderings of elements in the functional domain and the more relaxed orderings in the modifier domain.

27 Lemma *všečen* (inclusive “all”) and lemma *oba* (“both”). Tokens found: 3,162 i.p.m.: 25.99 | ARF: 1,758.

28 Tokens: 21 i.p.m.: 0.17; w.r.t. the corpus | ARF: 10

5.5 Elements Preceding D

Looking more closely at the DP structure, the initial position of the Determiner field can be preceded or intervened by several lexical entries, all of which rank among the vaguely defined group of quantifiers or adjectives. Assuming English *such* can be located in front of the Central Determiner (as in *Such a man is dangerous.*), the following provides some of the most common ones in English.

(23) **many/no/some/few** such friends/events

Looking at the corpora for the data presented in the tables above, the most frequent Czech items appearing in front of the demonstrative, the repertory seems to be similar to English.

- (24) (a) **celou** tu dobu
 whole the period
 “the whole period”
- (b) **další** taková událost
 next such event
 “a next event like that”
- (c) **mnohý** takový právník
 manyfold such lawyer
 “many a lawyer like that”
- (d) **jiné** takové indexy
 other such indices
 “other indices like that”
- (e) **žádná** taková škola
 no such school
 “no school like that”
- (f) **samotný** tento vývoj
 selfs this development
 “this development itself”

If the category D is a functional head, it plausibly selects a restricted range of elements for its specifiers. Given that the repertory of specifiers is similar in English and Czech, I conclude that the same functional head should be present in the two languages.

6. Summary

In this study I have listed the reasons why the universal DP hypothesis can be a suitable analysis of the Czech nominal projection, as well as being appropriate for English. I have provided arguments in the areas of:

- (a) **Semantics**, mentioning D/N-semantics, interpretability of semantic roles, evidence based on parallelism between VP/IP and NP/DP, and a structural subject position for the Czech Possessive Nouns;
- (b) **Morphology**, providing examples of Czech lexical entries that can be related to the functional domain of N (the D-field), which are part of a specific morphology, also showing some head-like properties with respect to, e.g., case assignment and agreement patterns;
- (c) **Syntactic distribution**, demonstrating the distributional properties of lexical entries plausibly related to the Determiner field, I have compared data from English with Czech showing similarities which signal the presence of a similar functional domain above the NP.

Although Czech speakers often believe in a free word order with no limits in their mother tongue, I have demonstrated several results of corpora searches which illustrate relatively strict rules attested in the ordering inside complex noun phrases. These rules, together with all the other arguments listed above, argue in favor of a universal DP analysis, as it predicts the similarities between languages which would otherwise remain unexplained.

It remains to be seriously addressed why some of the marked orderings sound acceptable to Czech native speakers, although they are not in fact attested in corpora. Some more formalized theory of pragmatic factors seems to be needed, which would have a potential to predict the distinctions between languages and which would allow the analysis of language structures to be based on more reliable evaluations of the data.

Chapter Two

Branimir Stanković

Arguments for a DP Analysis of Serbo-Croatian Nominal Expressions

1. Introduction

Ever since Abney's (1987) proposal for a DP analyses of nominal expressions in languages with articles, there has been an ongoing debate about the adequate model for the interpretation of nominal phrases in languages without articles, like Serbo-Croatian (SC). This problem has divided linguists into two groups. One group (Progovac 1998, Leko 1999, Aljović 2002, Caruso 2011, 2012) follows Abney (1987) and Longobardi's (1994) assumption that individual-denoting arguments must be DPs for gaining a theta-role in the argument structure, no matter whether the particular language has articles or not. These scholars claim that the determiner projection is a linguistic universal, and that in languages without articles this projection could be left empty, i.e., phonologically null. On the other hand, some linguists (Zlatić 1997, 1998, Trenkić 2004, Bošković 2008) are convinced that the differences between languages with and without articles are so big that the very structure of their nominal phrases is different. In their opinion, languages without articles don't project DP and, as a consequence, these languages show different syntactic behavior, like allowing left branch (LBE) and adjunct extractions (AE).

In this chapter I provide some empirical data in favor of the split-DP analysis of SC nominal expressions. SC spatial and temporal adjectives, as well as possessive adjectives and pronouns (STPAs) can move to a pre-cardinal position and, just like some determiners, trigger the definite/unique/specific reading of the referent of the entire linguistic expression:

- (1) **Sutrašnjih / Njihovih pet prezentacija** se otkazuje.
 tomorrow's.GenPl/ their.GenPl five presentation.GenPl Refl cancel.Pres3Sg
 # “**Five of tomorrow’s / their presentations** will be canceled.”
 “Tomorrow’s / Their five presentations will be canceled.”

Furthermore, discourse-linked (D-linked) adjectives, like ordinal numbers/ adjectives, and functional adjectives like *isti* (“same”) or *pomenuti/navedeni* (“mentioned”), always precede the noun (2), but the reverse order is ungrammatical (3).

- (2) **drugi / naredni / isti / pomenuti sastanak**
 second.NomSg next.NomSg same.NomSg mentioned.NomSg meeting.NomSg
 “the second/next/same/mentioned meeting”
- (3) ***sastanak drugi / naredni / isti / pomenuti**
 meeting.NomSg second.NomSg next.NomSg same.NomSg mentioned.NomSg

Finally, some D-linked adjectives, like STPAs, *pomenuti/navedeni* (“mentioned”), or the identity adjective *isti* (“same”), cannot be extracted from the rest of the nominal expression:

- (4) ***Iz kojeg grada**_i je Ivan upoznao [**pomenute /Markove kolege t**_i]?
 from which city is Ivan met mentioned Marko’s colleagues
 “Ivan met the mentioned / Marko’s colleagues from which city?”

I assume that SC nominal expressions project a phonologically null DP, which can be occupied by D-linked elements, thus obtaining a definite/unique/specific interpretation, more restricted word order, and disallowing LBE and AE. On this view, DP is present in the structure of SC nominal expressions, but when not saturated, it cannot act as a barrier for extractions from the rest of the nominal expression. Moreover, I will show that all of these adjectives (STPAs, ordinal, functional adjectives) share more mutual morphological, syntactic, and semantic properties with determiners than with “typical” descriptive (and substantive) adjectives. This suggests that SC determiners are not adjectives, as argued by Zlatić (1997, 1998) and Bošković (2008), but that they constitute two separate classes, and that there are even some SC adjectives that behave more like determiners than adjectives.

The chapter is organized as follows. In Section 2 I present the main arguments for and against the DP analysis of SC nominal expressions, as argued by Progovac (1998), Leko (1999), Aljović (2002), Caruso (2011, 2012), Zlatić

(1997, 1998), Trenkić (2004), and Bošković (2008). In Sections 3 and 4 the novel empirical data in favor of the DP-interpretation is offered, along with an investigation of the determiner-like nature of STPAs, ordinal, and functional adjectives. Section 5 concludes.

2. Pro et contra DP

In this section I present the main arguments pro and contra the DP analysis of nominal expressions in Serbo-Croatian, a language without articles. First, we will take a closer look at the arguments against this type of interpretation and, afterwards, the arguments for the DP approach.

2.1 Contra DP

Zlatić (1997, 1998) argues that noun phrases in articleless Slavic languages are NPs, having the structure in (5) rather than (6).

(5) [NP Spec [N' [N]]]

(6) [DP Spec [D' D [NP]]]

Using Zwicky's (1985) criteria for determining the head of a given phrase, Zlatić concludes that it is the noun and not the determiner that is the head of SC nominal phrases. Based on syntactic and morphological evidence, she shows that SC determiners are indistinguishable from the syntactic category adjective and should be classified as adjectives. In SC there is just one declension paradigm for (non-personal) pronouns and for the adjectives. SC "determiners," just like adjectives, agree in gender, number and case with the head noun:

(7)	nek-ih	mlad-ih	devoj-aka
	some-GenFemPl	young-GenFemPl	girl-GenFemPl
	"some young girls"		

The *-ih* ending for genitive plural feminine is present both on the pronoun stem *nek-* and on the adjective *mlad*. Unlike these two, the ending on the noun is from another set of paradigms. This morphology supports analyses in which both adjectives and pronouns are simply interpreted as specifiers of NP. More importantly, in SC the ordering of the pronoun and the adjective in the nominal expression is rather liberal, constrained only by the informational structure. That is the reason why all of the following combinations are judged acceptable by native speakers, but with strong stylistic, expressive markedness:

(8) (a) *devojke ove mlade*
 girls these young
 “these young girls”

(b) *mlade ove devojke*
 young these girls

(c) *devojke mlade ove*
 girls young these

(d) *mlade devojke ove*
 young girls these

Corver (1990, 1992) has made a similar observation about Polish and Czech “determiners,” which can occur after the head noun, just like their adjectives. Languages with DPs obviously don’t behave like the articleless Slavic languages in this perspective.

Bošković (1999, 2004, 2008) states that there are a number of typological differences between SC and languages with articles, which supports the claim that DPs are not present in traditional NPs. For instance, LBE (9) and AE (10) are allowed only in languages without articles:

(9) *Skupa_i / ta_i je vidio [t_i kola].*
 expensive/ that is seen car
 “He saw an/the expensive / that car.”

(10) *Iz kojeg grada_i je Ivan sreo [djevojke t_i]?*
 from which city is Ivan met girls
 “Ivan met girls from which city?”

Also, Bošković (2008) states that multiple *wh*-fronting (MWF) languages with articles show superiority effects in cases like (11):

(11) *Koj kogo vižda? / *Kogo koj vižda? (Bulgarian)*
 who whom sees whom who sees

(12) *Ko koga vidi? / Koga ko vidi?*
 who whom sees whom who sees

MWF languages without articles like SC, Polish, Czech, Russian, Slovenian, and Mohawk never show superiority effects, so any ordering of *wh*- elements is

acceptable,¹ as shown in (12). On the other hand, all languages that show superiority effects (Bulgarian, Macedonian, Romanian, Basque, and Yiddish) have articles. As Bošković points out, Hungarian is not an exception, as it has articles, and shows no superiority, but this doesn't violate the generalization that MWF languages without articles don't show superiority effects.

Finally, Trenkić 2004 took into consideration the type of mistakes made by SC native speakers in the L2 acquisition of English. Students were statistically more likely to omit articles with nouns modified by adjectives than with non-modified nouns. Adjectival pre-modification exerts a clear negative influence on the production of articles. This suggests that these learners might not have grammars equipped with DP, and that articles and adjectives might be competing for the same (modifier) position in the learners' grammars. So, as for Trenkić's (2004) investigation results, DP is not universal.

2.2 Pro DP

Progovac 1998 offers some evidence for the possible existence of a D projection in SC by showing that the positions of nouns and pronouns with certain restrictive adjectives are fixed and asymmetrical, in the sense that nouns must follow and pronouns must precede them. In (13) the adjective *samu* ("alone/herself") precedes the noun *Marija*, but in (14) it follows the pronoun *nju*:

(13) I **samu Mariju** to nervira.
 and alone Mary that irritates
 "That irritates even Mary."

(14) I **nju samu** to nervira. (Progovac 1998, 168)
 and her alone that irritates
 "That irritates even her."

Progovac concludes that SC seems to provide evidence of another functional head above NP, which may be the head of some version of "split D." "This may mean that the category D is a universal property of UG, and thus need not to be salient in the input of any particular language" (Progovac 1995, 172).

The fact that pronouns and adjectives share the same inflectional endings can easily be turned into an argument for the DP analysis. Leko (1999) assumes that SC determiners are generated in SpecNP, that they check for case, number, and gender features by moving through AgrP, and that the final point of their

¹ The ordering of *wh*- elements in SC, a language without superiority effects, is liberal, but restricted by information structure.

movement is SpecDP. This author proposes that SC demonstratives are not to be interpreted as heads of DPs. He follows Cinque (1994) in the assumption that different adjectives are generated in different specifier positions. Moving up, adjectives check Agr features, as well as definiteness in DefP, which generates the distinction between the long and short forms of SC adjectives, traditionally labelled “definite and indefinite adjective aspect” (*određeni i neodređeni pridevski vid*). All in all, Leko’s DP analysis explains why we find the same endings in the pronoun and adjective paradigms. Similarly, Aljović (2002) states that the source of pronominal and adjectival inflection might be the projection DP, or more precisely, the D head.

Caruso (2012) takes Newson et al.’s (2006) perspective that many determiners carry number features of their own:

- (15) these people *these person
oni ljudi *oni osoba
- (16) all answers *all answer
svi odgovori *svi odgovor
- (17) each prescription *each prescriptions
svaki recept *svaki recepti
- (18) an occasion *an occasions
jedna prilika ?jedne prilike

The determiners *these* and *all* select for [+plural] (15)–(16), and the determiners *each* and *a(n)* are marked for [–plural] (17)–(18). In the Croatian examples both nouns and determiners are marked for number and “therefore it is rather difficult to say where the number feature is projected from” (Caruso 2012, 150). The Croatian quantifiers *nekoliko* (“several”), *mnogo* (“many”), *puno* (“a lot of, much”), *malo* (“little”), *više* (“more”), *manje* (“less”), *dosta/dovoljno* (“enough”), *previše* (“too much”) occur with nouns specified for a [+plural] feature or non-count nouns like *mlijeko* (“milk”), *voda* (“water”), and *vino* (“wine”) (19), (21).

- (19) *nekoliko knjiga*
several books.GenPl

- (20) Pročitala sam *nekoliko knjiga*.
read Aux [several books.GenPl]-AccSg
“I read several books.”

(21) *malo vina*
 little wine.GenSg

(22) *Popila sam malo vina.*
 drunk Aux [little wine.GenSg]-AccSg
 “I drank little wine.”

In (19), the quantifier *nekoliko* (“several”) assigns genitive case to the noun *knjiga* (“books”), and so does the quantifier *malo* (“little”) in (21). In (20), as well as (22), the entire nominal complement of the verbs *pročitati* (“read”) and *popiti* (“drink”) is assigned accusative case. Within the Government and Binding (GB) framework, the conditions of structural case assignment involve the structural relationship of government and *c/m*-command. Caruso dismisses two other possible analyses, the “bare NP” approach (23), and an interpretation where determiner-like elements are placed in SpecDP (e.g., Leko 1999), (24), in favor of the interpretation that Croatian quantifiers are to be placed at the head of DP, (25), because only heads can act as governors and assign case to their nominal complements.

(23) [_{NP} AdjP *nekoliko/ malo* [_{N'} [_N *knjiga/ vina*]]]
 a few little books wine

(24) [_{DP} SpecDP *nekoliko/ malo* [_D D \emptyset [_{NP} *knjiga/ vina*]]]
 a few little books wine

(25) [_{DP} SpecDP [_{D'} D *nekoliko/ malo* [_{NP} *knjiga/ vina*]]]
 a few little books wine

Caruso (2011) offers some morphological and syntactic arguments against the adjectival interpretation of SC determiners. First, the group of descriptive adjectives constitutes an open, productive class, because these adjectives can change both form and meaning, thus creating new lexical items (26). Unlike adjectives, the group of determiners constitutes a closed class of lexical items with a limited and a clearly defined inventory of words (27).

(26) *crven* → *crvenkast* → *zacrvenjen*
 red redish red-heated

(27) *ovaj* / **ovajkast* / **zaovajjen*
 this *thisish -

Descriptive adjectives can create comparative and superlative forms, but determiners in general do not have the possibility of grading (except quantifiers like *a lot / much / many / a little*, due to their scalar nature). Also, descriptive adjectives can be modified by adverbs derived from various adjectives as well as by degree adverbs, but such a modification of determiners is not possible (excluding the same class of quantifiers). Similar observations about the adjectives *same*, *other*, and *last* have been made by Oxford (2010).

If possessives can appear in copular constructions in Croatian, and this indicates their adjectival status (as argued by Bošković 2008) (28), then we would expect all other determiners to display the same behavior, which simply isn't the case (29)–(30).

(28) Ova knjiga je moja.
 this book is mine
 "This book is mine."

(29) Ova knjiga je *jedna / ?prva / *nekoliko / *svaka / *veoma / *neka.
 this book is *one / ?first / *several / *each / *very / *some

(30) Knjiga je *ova / *ta / *ona.
 book is this / *that-MEDIAL / *that-DISTAL

The number of descriptive adjectives within the nominal complex is not limited. However, the number of determiners is limited, since the speaker can choose between a few lexical elements that specify the desired reference:

(31) *ova ona moja prva crvena kožna nogometna lopta
 *this that my first red leather football

Finally, if determiners and adjectives were of the same category, we would expect that adjectives are replaceable with determiners and *vice versa*. Caruso shows that coordination of the discontinuous adjectival constituent is only acceptable if the adjective is conjoined with another adjective, and never with a determiner:

(32) U izlogu su crveni i crni / *onaj / *moj / *prvi pullover.
 in the shop window are red and black / *that / *my / *first pullover
 "There are a red and a black / *that / *my / *first pullover in the shop window."

Bašić (2004) points out that quantifiers appear in pre-pronominal and post-pronominal position, yielding the partitive (33) and the non-partitive reading, respectively (34):

(33) Prodao je [**nekoliko** *ovih* knjiga]. (partitive)
 sold Aux several these.Gen books
 “He sold several of these books.”

(34) Prodao je [*ovih* **nekoliko** knjiga]. (non-partitive)
 sold Aux these.Gen several books
 “He sold these several books.”

Caruso (2012) argues that the only plausible explanation for the fact that the demonstrative in (34) is in genitive case is that both quantifiers and cardinal numbers occupy the highest functional projection within the inflectional domain. This is why all pronominal items are case-marked when cardinal numbers and certain quantifiers are present in the construction. After having been assigned genitive in their base-generated position within the inflectional domain, some pronominal items move out to the left periphery, where they check their specificity, focus and (in)definiteness features. In (35), I present Caruso’s (2012) split-DP proposal for Croatian nominal expressions with three domains: the left periphery, the inflectional domain, and the theta domain.

(35) the left periphery: [DP [TopP [FocP [DefP...]]]]
 the inflectional domain: [QP [DemP [PossP [NumP [FPAdj...]]]]]
 the theta domain: [nP [NP [N]]] (Caruso 2012, 292)

In the following section, we will show that a certain group of discourse-linked adjectives can also make the same type of movement from the inflectional domain to the left periphery, similar to determiners. SC spatial and temporal adjectives, and possessive adjectives and pronouns in the marked, pre-cardinal position trigger the definite/unique/specific interpretation, whereas expressions with these adjectives and pronouns in the non-marked, post-cardinal position are ambiguous between an definite/unique/specific and indefinite/non-unique/non-specific reading. Moreover, their nature is more close to determiners, as they constitute a closed class of lexical items with a limited and defined inventory of words. Also, most of these adjectives and pronouns do not have the possibility of grading, so have no comparative and no superlative form. These facts, on the one hand, suggest that there really is a line of demarcation between SC determiners and adjectives, but at the same time, this means that SC adjectives themselves constitute a heterogeneous class, consisting of “prototypical” adjective items and “determiner-like” ones.

3. More Data in Favor of a DP Analysis: Two Adjective Types

3.1 SC Spatial, Temporal, and Possessive Adjectives

As presented in (35), Caruso (2012) argues that Croatian adjectives are generated at the very bottom of the inflectional domain, underneath the numeral/cardinal projection (to differentiate the ordinal from the numeral projection, I will refer to the numeral projection as “the cardinal”). It has already been mentioned that some pronominal items move out to the left periphery (after having been assigned genitive in case there is a numeral or a quantifier present in the expression), where they check their specificity, focus/topic, and (in)definiteness features. I argue that SC spatial and temporal adjectives, as well as possessive adjectives and pronouns (STPAs), make the same type of movement, triggered by similar features (definiteness, uniqueness, specificity) implicitly present in the lexical content of these adjectives. In (36), the expression *pet sutrašnjih/njegovih prezentacija* is ambiguous between the definite and indefinite, unique and non-unique, as well as a specific and non-specific reading of its referent.

- (36) **Pet sutrašnjih / njihovih prezentacija** se otkazuje.
 five tomorrow’s.GenPl / their.GenPl presentation.GenPl Refl cancel.Pres3Sg
 (ambiguous)

“**Five of tomorrow’s / their presentations** will be canceled.”

“**Tomorrow’s / Their five presentations** will be canceled.”

(36), with the non-marked post-cardinal position of STPAs, could be felicitously uttered in any given situation when there are five presentations that would be canceled, no matter whether the referent of the bolded expression is already part of the discourse model or not (ambiguous for definiteness in the sense of Christophersen 1939 and Heim 1983²), unique in the relevant discourse domain or not (ambiguous for definiteness, i.e., uniqueness in the sense of Russell 1905) and specific for the locutor or not (ambiguous for specificity in the sense of Hintikka 1986). The non-marked, post-numeral construction simply isn’t specified for definiteness, uniqueness, or specificity. In contrast, the expression *sutrašnjih/njegovih pet prezentacija* in (37), with the adjective/pronoun in pre-cardinal position, has only a definite/unique/specific interpretation of its referent:

2 Sentence (36) could be used for a discourse-old referent in case the numeral bears the informational topic or focus, so that the number becomes prominent in the information structure by means of word order (and intonation).

- (40) Pet- \emptyset utrešni prezentacii se otkažuvaat. (Macedonian)
 five tomorrow's presentations Refl cancel.Pres
 Pet sutrešni prezentacii se otlagat. (Bulgarian)
 five tomorrow's presentations Refl cancel.Pres
 “Five of tomorrow's / their presentations will be canceled.”
 # “Tomorrow's / Their five presentations will be canceled.”

In Macedonian and Bulgarian, STPAs can stay post-cardinally and definiteness/uniqueness/specificity can be marked with the use of the definite article. More importantly, after the argued movement of STPAs to pre-cardinal position, the entire expression gets a definite/unique/specific interpretation (41), but the presence of the definite article in Macedonian and Bulgarian is obligatory (42).

- (41) Utrešni-**te** pet prezentacii se otkažuvaat. (Macedonian)
 tomorrow's.**DefArt** five presentations Refl cancel.Pres
 Sutrešni-**te** pet prezentacii se otlagat. (Bulgarian)
 tomorrow's.**DefArt** five presentations Refl cancel.Pres
 # “Five of tomorrow's / their presentations will be canceled.”
 “Tomorrow's / Their five presentations will be canceled.”

- (42) *Utrešni pet prezentacii se otkažuvaat. (Macedonian)
 tomorrow's five presentations Refl cancel.Pres
 *Sutrešni pet prezentacii se otlagat. (Bulgarian)
 tomorrow's five presentations Refl cancel.Pres
 “Five of tomorrow's / their presentations will be canceled.”
 # “Tomorrow's / Their five presentations will be canceled.”

The fact that no STPAs can occur pre-cardinally without the definite article is indirect evidence that Slavic STPAs are generated below the cardinal projection and that they move to pre-cardinal position driven by their semantic content to express features related to definiteness/uniqueness/specificity.

Unlike SPTAs, SC descriptive and substance adjectives (DSAs) are much rarely to be found pre-cardinally:

- (43) ?Našao sam **crvenih** / **gumenih** **pet lopti**.
 found Aux red.GenPl rubber-made.GenPl five balls
 “I've found the five red/rubber balls.”

Nevertheless, there might be some licensing contexts for word orders like (43), in which the pre-cardinal position of DSAs would be acceptable. For instance, in

(45) jučerašnji → *jučerašnjikast → *zajučerašnjen
 yesterday's *yesterdayish -

(46) Brankov → *Brankovkast → *zabrankovljen
 Branco's *Brancoish -

DSAs can create comparative and superlative forms (47), and most STPAs, just like determiners, do not have the possibility of grading (48)–(49):

(47) zlatan → zlatniji → najzlatniji
 golden more golden most golden

(48) tamošnji → *tamošnjiji → *najtamošnjiji
 thereout's *more thereout's *the most thereout's

(49) njen → *njeniji → *najnjeniji
 her *more her *the most her

DSAs can be modified by adverbs derived from various adjectives and by degree adverbs, (50), but such modification of most STPAs is not possible, as seen with determiners (51)–(52).

(50) potpuno / stvarno drven
 totally really wooden
 “totally/really made of wood”

(51) *potpuno / stvarno večerašnji
 *totally really this evening's

(52) *potpuno / stvarno gornji
 *totally really upper

Finally, the number of DSAs within the nominal complex is not limited (53). Unlike DSAs, the number of adjectives from each of the groups of STPAs is far more restricted (54)–(56), just like the number of determiners from the same determiner subclass:

(53) stara crvena kožna nogometna lopta
 old red leather football
 “old red leather football”

- (54) *ovdašnji tamošnji pisac
 *hereby's thereout's writer
- (55) *jučerašnji sadašnji razgovor
 *yesterday's current conversation
- (56) *Markov naš prijatelj
 *Marco's our friend

The two groups of adjectives in SC differ regarding one more important property: DSAs can have both the short and long form of adjectives, but STPAs can have either the short or long form (spatial and temporal adjectives appear only with the long form, and possessives have only the short one). Namely, in SC there are two adjective forms: the short one, traditionally labelled “indefinite adjective aspect” (*neodređeni pridevski vid*), and the long one, “the definite adjective aspect” (*određeni pridevski vid*). As shown in (57)–(59), DSAs have both forms, but STPAs have just one or the other.

- (57) lep- \emptyset , lep-**i**, drven- \emptyset , drven-**i**
 beautiful_s beautiful_L wooden_s wooden_L
- (58) *letošanj- \emptyset , letošnj-**i**, *goranj- \emptyset , gornj-**i**
 *last summer's_s last summer's_L *upper's_s upper's_L
- (59) Nevenin- \emptyset , *Nevenin-**i** / njen- \emptyset , *njen-**i** (osmeh)
 Nevena's_s *Nevena's_L her_s *her_L (smile)

The semantic contrast between the two adjective forms in linguistic literature is usually interpreted as definiteness (Belić 1949; Stevanović 1986; Leko 1999; Progovac 1995) or specificity (Aljović 2002; Trenkić 2004):

- (60) dobar- \emptyset drug, dobr-**i** drug
 good_s friend good_L friend
 “a good friend” “the good friend”

The data in (44–60) leads us to the conclusion that SC DSAs, “typical” adjectives that appear in both forms, have grammaticalized the semantic difference of definiteness/uniqueness/specificity by means of morphological encoding, but they show more restricted syntactic properties, as they are very rarely found pre-cardinal, usually when bearing contrastive topic or focus. These adjectives constitute an open, productive class, have comparative and superlative forms, can be modified by various

adverbs, and their number is not limited when they co-occur in the same nominal phrase. On the other hand, SC STPAs have either the long form (spatial and temporal adjectives) or the short one (possessives), which means that these adjectives and pronouns cannot mark definiteness/uniqueness/specificity morphologically. Nevertheless, STPAs in the presence of cardinal numbers or quantifiers can move to the left periphery of the expression and express the features of definiteness/uniqueness/specificity present implicitly in their lexical content, similarly to SC determiners. But this is not the only common property shared by determiners and STPAs. As seen, STPAs constitute a closed, non-productive class, they do not have the possibility of grading, can't be modified by most adverbs and the number of items from the same subclass of these adjectives/pronouns in the expression is restricted, similarly to determiners. All of these facts suggest that Zlatić's (1998) and Bošković's (2008) statement that SC determiners are actually adjectives simply doesn't hold. On the contrary, some adjectives, STPAs, are actually closer to determiners than to "typical" adjectives, DSAs, regarding morphology, syntax and semantics.

In the next section I will provide some more evidence for the presence of a functional projection related to referentiality above NP in SC. I will introduce more discourse related, functional adjectives that share most of the properties of determiners and lack the short adjective form. Moreover, most of these adjectives are always found pre-nominal, unlike DSAs, and more importantly, cannot be extracted from the rest of the nominal expression.

4. More Arguments for DP in SC, More Determiner-Like Adjectives

In SC some discourse-linked adjectives, like ordinal numbers/adjectives (ONA) and functional adjectives like *isti* ("same") or *pomenuti/navedeni* ("mentioned"), always precede the noun (61), whereas the reverse order is ungrammatical (62):

(61) **drugi** / **naredni** / **isti** / **pomenuti** **sastanak**
 second.NomSg next.NomSg same.NomSg mentioned.NomSg meeting.NomSg
 "the second/next/same/mentioned meeting"

(62) ***sastanak** **drugi** / **naredni** / **isti** / **pomenuti**
 meeting.NomSg second.NomSg next.NomSg same.NomSg mentioned.NomSg

On my analysis, ONAs and adjectives like *isti* and *pomenuti/navedeni* occupy the head of some functional projection of the split-DP:

(63) [_{FP} [_{drugi/ naredni/ isti/ pomenuti}] [_F [_{NP} [_N *sastanak*]]]]
 second next same mentioned meeting

The interpretation in (63) predicts that the word order in (62) will be ungrammatical, uniformly with the ungrammaticality of examples like **meeting the* in English.

Some D-linked adjectives, like a STPA, or *isti* (“same”) and *pomenuti/navedeni* (“mentioned”), cannot be extracted from the rest of the nominal expression, *contra* Bošković’s (2008) generalization:

- (64) ***Pomenuta**_i / ***Prošlogodišnja**_i je kupio [t_i **skupa kola**].
 mentioned / last year’s is bought expensive car
 “He bought the mentioned / last year’s expensive car.”

Similarly, adjuncts can’t be extracted from a nominal expression when any of these D-linked adjectives is present in the nominal expression:

- (65) ***Iz kojeg grada**_i je Ivan upoznao [**pomenute / Markove kolege** t_i]?
 from which city is Ivan met mentioned Marko’s colleagues
 “Ivan met the mentioned / Marko’s colleagues from which city?”

I argue that the D-linked adjectives in (64)–(65) (*pomenute*, *Markove*) occupy the head of some of the functional projections of the split-DP, which disallows LBE and AE, similar to languages with articles. These facts can’t be explained satisfactorily by means of the “bare” NP analysis. It is more reasonable to assume that DP **is** present in the structure of SC nominal expressions, but when not saturated, it cannot act as a barrier for LBE or SE. It seems that SC nominal expressions project a phonologically null DP, which can be occupied by various D-linked elements, thus obtaining a definite/unique/specific reading, more restricted word order, and disallowing extractions.

In addition, it is rather important to notice that all of the presented adjectives in (61)–(65) have only the long form (66), belong to closed, non-productive classes (67), cannot grade so they have no comparative and superlative form (68), can’t be modified by most adverbs (69) and finally, the number of items from the same subclass of these adjectives in the expression is restricted (70), similarly to STPAs and determiners.

- (66) ***drug-Ø**, ***naredan-Ø**, ***ist-Ø**, ***naveden-Ø**
 *second_s *next_s *same_s *mentioned_s

- (67) ***drugkast**, ***naredankast**, ***istkast**, ***navedenkast**
 *secondish *nextish *sameish *mentionedish

- (68) ***drugiji**, ***naredniji** ***istiji**, ***navedeniji**
 *seconder *nexter *sameer *mentioneder

- (69) *potpuno / *stvarno naredni / navedeni
 *totally *really next mentioned
- (70) *drugi peti učesnik, *prethodni naredni učesni
 *second fifth attendant previous next attendant

In this section we investigated D-linked and functional adjectives that share more mutual properties with determiners and STPAs than with DSAs. These facts strongly suggest that there are SC lexical items that display determiner-like morphology, syntax, and semantics. Once again, this raises the question of the foundation of the assumption that SC determiners are actually adjectives, which should be analyzed simply as specifiers of bare NPs, not DPs. The next section presents my conclusion on this issue.

5. Conclusion

In this chapter, I introduced some novel facts about the nature of SC nominal and cardinal phrases. First, we saw some indirect evidence of the presence of a functional projection “with D flavor” above SC nominal phrases, more precisely, above the cardinal projection. STPAs are triggered by the supposed features of definiteness/uniqueness/specificity in the split-D above NP to move to pre-cardinal position and check them by making the features in their lexical content more prominent. The same movement exists in other Slavic languages with and without articles. We saw that STPAs share more determiner properties, as they constitute closed, non-productive classes, they don’t have both adjective forms, they don’t have comparative and superlative, they can’t be modified by most adverbs, and their number is limited when they co-occur in the same nominal expression. Moreover, we introduced several discourse-linked, functional, and ordinal adjectives that always precede the noun and can’t be extracted from the rest of the NP. This was seen as a sign of a “DP-like” barrier, similar to the one present in languages with articles. This suggests that DP might be always present above SC NPs, but is active only when saturated with a determiner or some of the investigated adjectives. In addition, it was argued that SC determiners are not simply adjectives and that those two are separate classes in SC. Moreover, I postulated two types of SC adjectives, and showed that the analyzed adjectives display more morphological, syntactical, and semantic determiner-like properties than “typical,” descriptive, and substance adjectives.

Section Two

Functional Heads
in Nominal Projections

Chapter Three

Katarzyna Miechowicz-Mathiasen

Numeralization of Numeral Nouns in Polish

1. Introduction

In this chapter, I present a proposal accounting for the diachronic changes that affected Polish higher numerals ≥ 5 .¹ The changes under consideration were both paradigmatic as well as syntactic and together amounted to the creation of a separate part of speech, which comprises the said group of numerals. The process under investigation is argued to be an instance of grammaticalization, i.e., reanalysis of lexical material into functional material (in the sense of Roberts and Roussou 1999, 2003), and in this case involves reanalysis of the so-called numeral names² (i.e., nouns denoting numbers) into numerals, hence will be referred to as numeralization.

The solution proposed here is syntactic and shows that the paradigmatic changes in the declension of numerals result directly from their changing syntax; however, it must also be noted that the alterations in their syntactic behavior were brought upon by a different paradigmatic change which did not target numerals directly,

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2 “Numeral names” (Polish *imiona liczbowe*) is a term coined by Polish grammarians (among others Kopczyński 1817, Jakubowicz 1823, Muczkowski 1825) and refers to nouns denoting numbers, to be precise, the higher numerals which have inherited their nominal status from Proto-Slavonic. Because numeral names were generally simply referred to as numerals, a word of explanation concerning terminology is in order here: I use the term “numerals” to refer to a new part of speech with a paradigm specific only to it; I oppose numerals so defined to nouns denoting numbers (i.e., “numeral names/nouns”) from which they derive historically, but which were not a homogenous group (e.g., 5–10 were *i*-stem nouns, 100 was an *o*-stem neuter). See also Schabowska (1962) where the term *numeralizacja/uliczebnikowienie* is used in a similar sense to mine.

but rather their complements. Since it is clear that the syntax of numerals can only be analyzed in connection to their counted nouns, as the influences between them were bidirectional, it will be shown that numeralization of numeral names results from two related historical changes that affected their complements (particularly masculine personal nouns): (i) the development of a new category of virility in the plural (singling out masculine personal nouns, opposed to literally the rest),³ and (ii) the spread of its hallmark Acc/Gen syncretism.⁴ Since the nouns themselves did not have the capacity to implement the change, it was up to the accompanying modifiers to pick up the job.

With reference to analyses such as Ritter (1993), and experimental studies by De Vicenzi (1999), and De Vicenzi and Di Domenico (1999), which propose gender to be parasitic on an existing functional head, whereas number is a projecting category, I propose drawing upon Greenberg's (1963, 74) Universal No. 36 ("If a language has the category of gender, it always has the category of number."), such that the head on which gender is dependent in Polish is the same head which introduces number, i.e., Num^o of NumP. It is argued below that the reason why numerals become exponents of the new gender distinctions in the plural, shedding their own nominal properties (ϕ -features) in the process, is because they become lexicalizations of the functional head Num^o. Seeing as they realize the gender of the counted noun (and not their own feminine gender), it is argued that it must be the Num^o of the counted noun that they lexicalize. It will be thus shown that the once biphrasal structure in which both nouns projected their respective noun phrases is reduced to a monophrasal structure once numerals become lexicalizations of the Num^o head in the extended projection of the counted noun (Grimshaw 1991).⁵ In what follows, I will present and discuss historical data in support of my proposals. The data is drawn both from literary sources and normative texts (grammar books, manuals, and dictionaries) from the relevant periods.

3 The category of virility includes masculine personal nouns only, as opposed to other Slavic languages where a similar effect is due to animacy. In the Polish plural, animacy does not perform this role, as the division is literally between masculine persons and the rest (female persons, animals, objects).

4 Throughout the chapter the following abbreviations will be used: (i) gender: M(asculine), F(eminine), N(euter), V(irile), NV(non-virile); (ii) case: NOM(inative), ACC(usative), GEN(itive), DAT(ive), INST(rumental), LOC(ative), VOC(ative); (iii) number: SG(singular), DU(dual), PL(plural); (iv) syncretisms: NOM/ACC, ACC/GEN.

5 Although reminiscent of Rutkowski's (2002) analysis, there are crucial differences between his proposal and mine with respect to where the numeral ends up and which part of the structure is reduced. In my proposal the numeral ends up in the Num^o of the counted noun and it is the numeral's original DP that is reduced – this explains why the numeral exhibits the gender of the counted noun and not its own (on the assumption that Num introduces both number and gender features, see Miechowicz-Mathiasen 2012 for further details).

2. Some Historical Background of Numeralization

2.1 The Acc/Gen Syncretism and the Rise of Virility

This section sketches some details pertinent to the historical background of numeralization, which constitutes the focus of this investigation. I have mentioned in the introduction that the process itself was triggered by changes not bearing directly upon numeral names, but rather on their nominal complements. These two issues were the introduction of an innovative Acc/Gen syncretism and the syncretism's subsequent narrowing reference to include exclusively virile (masculine personal) nouns in the plural and thus becoming a signature mark of virility.⁶

The innovative Acc/Gen syncretism has been argued to have functional underpinnings (Thomson 1909, Meillet 1924, Laskowski 1988, Mindak 1990). Specifically, it has been proposed that its introduction was caused by the need to contrast the subject and object in a (transitive) clause. The reason why there was a need for such a resolution at all had its roots in paradigmatic changes that affected masculine nouns. Proto-Slavonic (and subsequently also Old Polish) inherited from Proto-Indo-European the old Nom/Acc syncretism characteristic of all neuter nouns (always inanimate, feminine and masculine nouns were unmarked for animacy, Laskowski 1988, 114). This syncretism, however, has infiltrated the paradigms of quite a number of masculine nouns (predominantly due to phonological changes that were taking place in parallel), including those denoting animates. As Nom in the majority of sentences is the case born by the subject, and Acc by the object, the spreading Nom/Acc syncretism must have caused some confusion, especially with the presence of the relatively free word order. Therefore, it must have often been impossible to distinguish one's object from one's subject, in particular when both referred to persons, as argued by Laskowski (1988, 114–115).

This line of reasoning is supported by the fact that it was in the singular paradigm of personal pronouns that we see the first instances of the innovative Acc/Gen syncretism, which indicates that its original motivation was to identify persons. It is also supported by findings in the plural paradigm where pronouns (together with numerals) were the first to exhibit the new syncretism. When the syncretism eventually infiltrated the dual and the plural to expose the new gender distinction (virile vs. non-virile), the earliest examples of virile nouns using the innovation appeared in the company of either pronouns or numerals, whereas whenever bare, the virile nouns kept to the old Acc forms syncretic with Nom. In other words, viriles, i.e., masculine personal plural nouns, for whose benefit the new syncretism entered the

⁶ This can only be said about the plural today, as in the singular the Acc/Gen syncretism also included non-personal animates (e.g., *pies* “dog”) and later, from the 18th c. onwards, further spread to various related groups of inanimate nouns (names of games, currency, dances, etc.; see Kucała 1978, 93). Therefore it is only in the plural that the syncretism remains a hallmark of virility.

plural paradigm, were the sole lexical items unable to use it unless accompanied by a numeral or a pronoun which did it for them.⁷ It appears then that it was the need to exhibit the new gender distinctions of plural nouns that must have triggered the change in the category of numeral names, as only lexical items capable of exhibiting the new genders (pronouns, numerals, also personal substantivised adjectives) were at the same time capable of taking on the new syncretism.

2.2 Paradigmatic Changes of *Dziesięć* “Ten,” *Sto* “Hundred,” and *Tysiąc* “Thousand”

Below, I present the evolution of the paradigms of the three chosen numerals: *dziesięć* “ten,” *sto* “hundred,” and *tysiąc* “thousand,” accompanied by explanations. It will be shown how these changes are related to the process of numeralization.

My findings are based on both secondary (normative) and primary texts. The 15th/16th c. paradigms were compiled on the basis of the following works in which the relevant forms appeared: *Biblia Królowej Zofii* (1455), *Ortyle magdeburskie* (ca. 1480), *Rozmyślanie przemyskie* (ca. 1500), Marcin Bielski’s *Kronika wszystkiego świata* (1554), *Biblia Brzeska* (1563), Jan Mączyński’s *Lexicon Latino-Polonicum* [...] (1564), Łukasz Górnicki’s *Dworzanin Polski* (1566), and Piotr Stojęński’s *Polonicae gramatices institutio* [...] (1568). I also referred to the expertise of historical grammarians to fill in some missing forms which did not occur in the enumerated works (in particular Łoś 1927, and Kalina 1878). The 17th c. paradigms were compiled on the basis of: *Biblia Gdańska* (1632), Franciszek Mesgnien’s *Grammatica seu Institutio Polonicae Linguae* . . . (1649), Jan Andrzej Morsztyn’s translation of Pierre Corneille’s *Le Cid* (Polish *Cyd*) (1661), Waclaw Potocki’s *Wojna chocimska* ([1670] 1880), and Jan Chryzostom Pasek’s *Pamiętniki* ([1690–1695] 1836).⁸ The 18th century paradigms are based on the data from contemporary historical grammars

7 The eventual ability of bare nouns to use the Acc/Gen syncretism constituted the very last step in the syncretism’s development. One can find isolated examples of bare viriles standing in the new Acc in the course and mostly towards the end of the 17th century, and for a long time they were still very rare, gaining slightly more ground later in the 18th century (Bajerowa 1964, Rzepka 1975, Kucala 1978). Finding out exactly when bare viriles cross that boundary (i.e., gain independence in exhibiting the Acc/Gen syncretism) would require a separate study. Historical grammarians have focused on finding (and counting) instances of viriles using the Acc/Gen syncretism to capture its progress. However, even when they divide the occurrences between modified (those that appear with numerals or adjectives) and unmodified, the results are often confusing. For example, Rzepka (1975, 58) refers to unmodified nouns, giving a few examples of bare viriles, but among them we find a noun with a possessive pronoun, which in view of the proposals pursued here is not an instance of a bare noun. In particular, possessives were capable of standing in the new Acc forms before the nouns.

8 While I have not found the innovative forms of the selected numerals in the 17th c. texts I have examined, the lower, simple numerals 2–9 had already been using the Acc/Gen syncretism in the 16th c. The present study focuses on the bases *dziesięć*, *sto*, and *tysiąc* to best bring out the process of numeralization that affected them consecutively, and in the case of *tysiąc* is still very much in progress.

(Klemensiewicz et al. 1965, Siuciak 2008) as well as Bajerowa’s (1964) seminal study of the literary language of that period. The 19th century works included Adam Mickiewicz’s *Pan Tadeusz* (1834), and *Dziady* ([1820–1832] 1896), Edmund Chojecki’s translation of Jan Potocki’s *Manuscrit trouvé à Saragosse* (1805, Polish *Rękopis znaleziony w Saragossie* 1847), and his own novel *Alkhadar* (1854), as well as Bolesław Prus’s *Faraon* ([1895] 1897). The normative texts from this period that I have used include Kopczyński (1817), Jakubowicz (1823), Muczkowski (1825), and Malinowski (1869).

With the objective of ascertaining the case-contexts in which all the numeral forms appeared, I have compiled a miniature corpus of sentences including the majority of the attested forms (which was necessary due to the fact that the paradigms exhibit a lot of syncretisms). Their inclusion would extend the chapter by ca. forty pages (with glosses and translations), and therefore I am only presenting the bare paradigms, providing examples whenever necessary. I present each numeral separately, specifying the differing nominal and numeral declensions. It must also be noted that the forms I present, e.g., Nom, are the forms that were found in the contexts in which we find Nom (i.e., the subject position, following the comparative particle *niż* “than”), and this is replicated for all the remaining cases. In other words, the given forms are presented according to both their morphology and their distribution, and are not isolated dictionary entries. Therefore, we will find *-dziesiąt*, an originally Gen. Pl form (forms preceded by a hyphen are bound morphemes), in various case contexts within the paradigm. The reason why I present the forms in this manner is because this is the only way in which we can see how the syncretisms have spread, how plural forms replaced the dual ones, and how the originally dual *-u* ending has been reanalyzed to represent the virile gender in the plural.

As we shall see below, *dziesięć* “ten” and *sto* “hundred” exhibit quite a wide range of various forms. The existence of multiple forms in the plural paradigms is easily accounted for, i.e., they differ according to the multiplier of the numeral. As plural forms of *dziesięć* and *sto* mostly appear as their multiplications by simple numerals 2–9, the varying forms are directly dependent on whether the multiplication was by 2, 3–4, or ≥ 5 (later also on the presence of synthesized forms, see Table 4 below). I summarize this in Table 1 underneath.

		Multiplier		
		2	3–4	5–9
Multi- plicand	10	-dzieście/-dzieścia	-dzieści/-dziesiętu	-dziesiąt/-dziesięciu
	100	-ście/-sta/-stu	-sta/-set/-stu	-set

Table 1. *The forms of multiplicands with respect to their multipliers in NOM/ACC.*

We begin with the lowest of the three bases: *dziesięć*, belonging to the declension of *i*-stem nouns, paralleling the behavior of the original *i*-stem nouns *kość* “bone,” *nić* “thread,” *pięść* “fist,” etc., as well as numerals 5–9.

Singular	Nom	15th – 21st c.	kość	=	15th c.	dziesięć	→	21st c.	dziesięć/dziesięciu
	Acc		kość	=		dziesięć			dziesięć/dziesięciu
	Gen		kości	=		dziesięci			dziesięciu
	Dat		kości	=		dziesięci			dziesięciu
	Inst		kością	=		dziesięcią			dziesięciu/dziesięcioma
	Loc		kości	=		dziesięci			dziesięciu

Table 2a. Paradigms of the nouns *kość* “bone” and *dziesięć* “ten” of the *i*-stem declension.

Plural	Nom	15th – 21st c.	kości	=	15th c.	-dzieści	→	21st c.	-dzieści/dziesiąt
	Acc		kości	=		-dzieści			-dzieści/dziesiąt
	Gen		kości	=		dziesiąt			-dziesięstu/-dziesięciu
	Dat		†kościom kościom	=		dziesięciom			-dziesięstu/-dziesięciu
	Inst		kośćmi	=		dziesięćmi			-dziesięstoma/ -dziesięcioma
	Loc		kościach	=		-dziesięstoch			-dziesięstu/-dziesięciu

Table 2b. Paradigms of the nouns *kość* “bone” and *dziesięć* “ten” of the *i*-stem declension.

	15/16th c.	17th c.	18th c.	19th c.	21st c.	
Singular	Nom	dziesięć	dziesięć	dziesięć _{NV} dziesięć _V	dziesięć _{NV} dziesięć _V	dziesięć _{NV} dziesięć _V
	Acc	dziesięć	dziesięć	dziesięć _{NV} dziesięć _V	dziesięć _{NV} dziesięć _V	dziesięć _{NV} dziesięć _V
	Gen	dziesięci dziesięci	dziesięci	dziesięciu	dziesięciu	dziesięciu
	Dat	dziesięci	dziesięci	dziesięciu dziesięciom	dziesięciu	dziesięciu
	Inst	dziesięcią	dziesięci	dziesięcią dziesięciu dziesięciom	dziesięciu	dziesięciu dziesięcioma
	Loc	dziesięci dziesięci	dziesięciu dziesięci	dziesięciu	dziesięciu	dziesięciu

Table 3a. *Dziesięć* “ten.”

		15/16th c.	17th c.	18th c.	19th c.	21st c.
Plural	Nom	-dzieści -dziesiąt	-dzieści	-dzieści _{NV} -dziesiąt _{NV} -dziestu _V -dziesięciu _V	-dzieści _{NV} -dziesiąt _{NV} -dziestu _V -dziesięciu _V	-dzieści _{NV} -dziesiąt _{NV} -dziestu _V -dziesięciu _V
	Acc	-dzieści -dziesiąt	-dzieści -dziesiąt	-dzieści _{NV} -dziesiąt _{NV} -dziestu _V -dziesięciu _V	-dzieści _{NV} -dziesiąt _{NV} -dziestu _V -dziesięciu _V	-dzieści _{NV} -dziesiąt _{NV} -dziestu _V -dziesięciu _V
	Gen	dziesiąt -dziesiąt	-dziesiąt	-dziesiąt -dziestu	-dziestu/ -dziesięciu	-dziestu/ -dziesięciu
	Dat	dziesiąciom -dziestom -dziesiąt	-dziestu	-dziestu -dziesiąt -dziesięciu	-dziestu/ -dziesięciu	-dziestu/ -dziesięciu
	Inst	dziesiąćmi -dzieści -dziesiąt	-dziestoma	-dziestoma -dziestu -dziesiąt	-dziestoma -dziesięcioma -dziestu/ -dziesięciu	-dziestoma -dziesięcioma -dziestu/ -dziesięciu
	Loc	-dziestoch -dziesiąt -dzieści	-dziestu	-dziestu -dziesiąt -dziesięciu	-dziestu/ -dziesięciu	-dziestu/ -dziesięciu

Table 3b. Dziesięć “ten.”

		15/16th c.	17th c.	18th c.	19th c.	21st c.
Dual	Nom	-dzieścia -dzieście	-dzieścia	-dzieścia _{NV} -dziestu _V	-dzieścia _{NV} -dziestu _V	-dzieścia _{NV} -dziestu _V
	Acc	-dzieścia -dzieście	-dzieścia	-dzieścia _{NV} -dziestu _V	-dzieścia _{NV} -dziestu _V	-dzieścia _{NV} -dziestu _V
	Gen	-dziestu	-dziestu	-dziestu	-dziestu	-dziestu
	Dat	-dziestoma	-dziestom -dziestu	-dziestom -dziestu	-dziestu	-dziestu
	Inst	-dziestoma -dziesty	-dziestoma	-dziestoma -dziestu	-dziestoma -dziestu	-dziestu -dziestoma
	Loc	-dziestu	-dziestu	-dziestu	-dziestu	-dziestu

Table 3c. Dziesięć “ten.”

As we can easily notice, the declension of *kość* “bone” has remained nearly unchanged throughout the history of Polish, but one cannot say the same about numerals 5–10.⁹

9 *Dziesięć* was not originally an *i*-stem, but rather a consonantal stem noun. This is not visible in the Polish paradigms, but in Old Church Slavonic we find that alongside /i/-Gen/Inst singular forms, it also had masculine type /e/-Gen forms in dual and plural (Huntley 1993, 148; see Fryšćák 1970,

In the structural cases of the singular paradigm of *dziesięć* the only change we see is the one which admits the gender distinction between virile and non-virile nouns; this change is identical to the one that slightly earlier affected the simple numerals 5–9 with which *dziesięć* shares its paradigm; however, *dziesięć* differs from 5–9 in that it also has a plural paradigm.¹⁰

The plural forms of *dziesięć* are particularly interesting because these are the ones in which *dziesięć* itself is counted (multiplied or quantified by the vague numerals such as *kilka* “a few”) and thus becomes part of a compound numeral. The role of *dziesięć* within such compounds depended on whether the multiplier belonged to lower numerals (2, 3–4), or the higher ones (5–9). If the multiplier happened to be one of the lower adjectival ones (2, 3–4), *dziesięć* took on the case-inflection expected in the relevant context as required by the verb, preposition, etc. In compounds with higher nominal numerals (5–9), initially *dziesięć* was treated just like any other counted noun: so long as the multiplier was perceived as nominal, it was also the one taking on the inflection required by the context, whereas *dziesięć* bore Gen.Pl checked by its nominal multiplier. Consider (1) with a preposition checking Inst:

- (1) (a) z pięcią synów
 with five_{INST.SG} sons_{GEN.PL}
 “with five sons”
- (b) z pięćdziesiąt synów
 with five_{INST} tens_{GEN.PL} sons_{GEN.PL}
 “with fifty sons”

In both (1a) and (1b) we see that it is the multiplier (nominal numeral) that bears Inst, whereas the multiplicand (*syn* “son” / *dziesięć* “ten”) stands in Gen.Pl; notice also that in (1b) *dziesięć* itself (being nominal) also enforces Gen.Pl on the noun *synów* “sons.”

23, 59, 89, for similar comments about Russian, Czech, and Serbo-Croatian 10). The only difference between *dziesięć* and 5–9 reported by Comrie (1992, 748) and Siuciak (2008, 18) is that in the early texts, unlike the exclusively feminine 5–9, it had the capacity to trigger both masculine and feminine agreement.

¹⁰ Plural forms of numerals 5–9 were extremely rare and most historians do not consider them, referring to the numerals simply as feminine singular nouns and putting their singularity down to their abstractness. This explanation is quite implausible for the following reasons: (i) plural forms of these numerals did occur, however rarely; (ii) after numeralization of 5–9 Polish quickly developed their nominal counterparts *piątka* “a five,” *szóstka* “a six,” etc., which do have plural forms *piątki* “fives,” *szóstki* “sixes,” but are no less abstract; and (iii) bases such as 10, 100, and 1,000 are also abstract in meaning but have always had plural forms.

The changes that *dziesięć* has undergone in parallel to 5–9 concerned its singular paradigm, however, its combinations with simple numerals to form compounds intensified the paradigmatic changes in the plural one as well. Notice, in particular, that already in the earliest texts the plural forms of *dziesięć* are almost exclusively represented by bound morphemes (there are only three exceptions in 15–16th c. texts, of which the Dat and the Inst examples had a single instantiation each). Thanks to numeralization affecting the plural form of *dziesięć* so early, we can now observe how the compounds it formed with simple numerals gradually began to fuse and how the inflection progressed towards the end of the compounded word, as represented for *pięćdziesiąt* “fifty” in Table 4 below (based on Łoś 1927).¹¹

	Old Polish	...	Modern Polish
Nom/ Acc	pięć _{NOM/ACC} dziesiąt _{GEN} kobiet _{GEN}	pięćdziesiąt _{NOM/ACC} kobiet _{GEN}	pięćdziesiąt _{NOM/ACC} kobiet _{GEN}
Gen	pięci _{GEN} dziesiąt _{GEN} kobiet _{GEN}	pięćdziesiąt _{GEN} kobiet _{GEN}	pięćdziesięciu _{GEN} kobiet _{GEN}
Dat	pięci _{DAT} dziesiąt _{GEN} kobiet _{GEN}	pięćdziesiąt _{DAT} kobiet _{GEN}	pięćdziesięciu _{DAT} kobietom _{DAT}
Inst	pięci _{INST} dziesiąt _{GEN} kobiet _{GEN}	pięćdziesiąt _{INST} kobiet _{GEN}	pięćdziesięcioma _{INST} kobietami _{INST}
Loc	pięci _{LOC} dziesiąt _{GEN} kobiet _{GEN}	pięćdziesiąt _{INST} kobiet _{GEN}	pięćdziesięciu _{LOC} kobietach _{LOC}

Table 4. Gradual synthetization of compound numerals on the example of 50 in “fifty women.”

The characteristic virile *-u* ending, which soon became a hallmark of the numeral declension, had its beginnings in the dual paradigm, more precisely in Gen. Du (check out Gen. Du *-dziestu* in the 15–16th c. column in Table 3 above). The progression of the Acc/Gen syncretism meant substitution of the original Acc forms with the Gen ones whenever in the company of virile nouns. This is how the original Gen. Du ending became also an Acc. Du ending, which subsequently spread into the plural paradigm and became a signature of virility. The question now is: how did it become a distinctive characteristic of the numeral declension?

A partial answer to this question lies in the nature of the dual and its inseparable meaning of *two/even/couple*. There were very few nouns which allowed dual inflection without the presence of the numeral *dwa* “two” (none of them virile, e.g., *uszy*

¹¹ In present day Polish we still see forms which are not fully synthesized, as in Nom/Acc/Gen *pięćuset mężczyzn* “five hundred men,” Gen *dwustu kobiet* “two hundred women.”

“ears,” *oczy* “eyes,” *ręce* “hands”), and I find it plausible that this was projected onto the plural paradigm, i.e., that such an early occurrence of the innovation in the presence of numerals in the plural paralleled the obligatory presence of *dwa* “two” in the dual (see also Rzepka 1975 for a similar view). In Table 3 we see the original 15–16th c. Gen. Du *-dziestu* being substituted for Acc and Gen in the plural paradigm in the 18th c.,¹² progressing steadily until eventually it overtakes the whole paradigm, and is only absent in structural cases in combinations with non-virile nouns.

Next, we take a closer look at *sto* “hundred.” *Sto* has undergone changes similar to those of 5–9 and 50–90, as it also started off as a noun. This time however, we are dealing with a neuter noun belonging to *o*-stems, like *miasto* “city.” Here, again, we do not see any significant changes in the paradigm of the content noun, but we see crucial modifications in the paradigm of the numeral.

	Old Polish/Modern Polish		Old Polish		Modern Polish	
	singular	plural	singular	plural	singular	plural
Nom	miasto	miasta	sto	sta	sto _{NV} /stu _V	-sta/ -set/-stu
Acc	miasto	miasta	sto	sta	sto _{NV} /stu _V	-sta/ -set/-stu
Gen	miasta	miast-ø	sta	set/-set	stu	-set/-stu
Dat	miastu	miastom	stu	stom	stu	-set/-stu
Inst	miastem	miastami	stem	sty/stami	stu/stoma	-set/ -stoma/ -stu
Loc	mieście	mieściech/ miastach	ście/stu	stoch/stach	stu	-set/-stu

Table 5. *Paradigms of a neuter o-stem noun miasto “city” compared to sto “hundred.”*

In Table 6 below, I single out the numeral and nominal declensions of singular *sto* in the 19th century. Crucially, the nominal declension could only be employed when *sto* occurred alone (i.e., without a complement) and rather than carrying the meaning of a concrete number, it was used to denote an approximate large number, similarly to the way we use a derivative of *sto* today, the noun *setka* “a hundred.”

What is particularly interesting in the plural paradigm of Modern Polish *sto* (although this had already started in the 19th c.), is that the virile plural forms are identical to the singular ones, i.e., we see the form *stu/-stu* throughout both the singular and the plural paradigms (see the last column in Table 6 above). This

12 We can also see it in Nom, which is explained via the so-called Accusative Hypothesis – a descriptive fact about Polish numeral expressions according to which they are intrinsically Acc, see Miechowicz-Mathiasen (2012) for an account of this hypothesis, as well as Przepiórkowski (1996, 2004), and Franks (2002), who refer to it as an explanation of various puzzling facts.

form is the one that we observe in combinations with the agreeing adjectival lower numerals (2, 3–4), the compounds in which *sto* is the superordinate item (as opposed to compounds with higher nominal numerals 5–9, with respect to which it is subordinate and thus takes on the gen. pl. form *-set*). Since the spread of the Acc/Gen syncretism (a signature mark of virility) is what triggered numeralization in the first place, Modern Polish *sto* appears to be exclusively numeral in the singular, in parallel to the singular simple numerals (2–9). Judging by the fact that already in the 19th c. the plural *sto* has almost completely lost its independence and is realized solely as part of compound numerals (as a bound morpheme), it appears that its numeralization was well under way then and is now complete. I exemplify the compounds with 2, 3 and 5 both with a virile (*chłopcy* “boys”) and a non-virile noun (*kobiety* “women”) in Table 7 below. We can see that the synthetization with lower adjectival numerals is complete with 3 (same with 4); the only exception is 2, where we see remnants of the dual, and that it is an ongoing process with 5–9, where the inflection still has not progressed towards the end of the compound, and is only present on the multiplier.

	Singular					
	15th/16th c.	17th c.	18th c.	19th c.	21st c.	
				Noun	Numeral	
Nom	sto	sto	sto/stu	sto/stu	sto _{NV} /stu _V	sto _{NV} /stu _V
Acc	sto	sto/stu	sto/stu	sto/stu	sto _{NV} /stu _V	sto _{NV} /stu _V
Gen	sta	sta/stu	sta	sta	stu	stu
Dat	stu	stu	stu	stu	stu	stu
Inst	stem	stem	stem/stema	stem	stu/stoma	stu/stoma
Loc	ście/stu	stu	stu	stu	stu	stu

Table 6a. *Sto* “hundred.”

	Plural				
	15th/16th c.	17th c.	18th c.	19th c.	21st c.
Nom	sta	sta/-sta	sta/-sta/-set	sta/-sta/-set	-sta/-set/ -stu
Acc	sta	sta/-sta	sta/-sta/-set	sta/-sta/-set	-sta/-set/ -stu
Gen	set/-set	set/-set	set/-set	set/-set	-set/-stu
Dat	stom	stom	stom	stom	-set/-stu
Inst	sty	stami/ stoma/sty	stami/sty/set/ -stoma/-set	stami/sty/- stoma/-set	-set/-stu /-stoma
Loc	stoch/stach	set	set/-set	stach/-stu	-set/-stu

Table 6b. *Sto* “hundred.”

	Dual				
	15th/16th c.	17th c.	18th c.	19th c.	21st c.
Nom	ście/-ście	-ście	-ście/-sta/-stu	-ście/-sta/-stu	-ście/-stu
Acc	ście/-ście	-ście	-ście/-sta/-stu	-ście/-sta/-stu	-ście/-stu
Gen	stu/-stu	set/-set	-set/-stu	-set/-stu	(same as plural)
Dat	stoma/-stoma	stom/-stom	-stom	-stom/-set	
Inst	sty/-sty stoma/-stoma	sty/-sty stami/-stami	-set/-stu	-set/-stu	
Loc	stu/-stu	set/-set	-set/-stu	-set/-stu	

Table 6c. Sto “hundred.”

	2 (“two hundred”)	3 (“three hundred”)	5 (“five hundred”)	“women” “boys”
Nom/ Acc	dwieście _{NV} dwustu _V	trzysta _{NV} trzystu _V	pięćset _{NV} pięciuset _V	kobiet _{GEN.PL} chłopców _{GEN.PL}
Gen	dwustu	trzystu	pięciuset	kobiet _{GEN.PL} chłopców _{GEN.PL}
Dat	dwustu	trzystu	pięciuset	kobietom _{DAT.PL} chłopcom _{DAT.PL}
Inst	dwustu / dwustoma	trzystu/trzystoma	pięciuset/pięciomaset	kobietami _{INST.PL} chłopcami _{INST.PL}
Loc	dwustu	trzystu	pięciuset	kobietach _{LOC.PL} chłopcach _{LOC.PL}

Table 7. Compound numerals with sto and multipliers 2, 3, and 5 in virile and non-virile.

A similar change can also be observed in compounds with 5–9 in the plural paradigm of the lower base *dziesięć* discussed earlier. If one looks back at the plural paradigm in the last column of Table 3 and the synthetic forms in Table 4, one can see that the originally singular form *-dziesięćciu* (*-dziesięćcioma* in Inst) has nearly pushed out the Gen. Pl. form *-dziesiąt* (see also Table 1 above).

Below, I present the paradigms of the nominal numeral *tysiąc* “thousand” which changed the least of the three. *Tysiąc* originally belonged to consonantal stems and remains one till today.

	Singular				
	15th/16th c.	17th c.	18th c.	19th c.	21st c.
Nom	tysiąc	tysiąc	tysiąc	tysiąc	tysiąc
Acc	tysiąc	tysiąc	tysiąc	tysiąc	tysiąc
Gen	tysiąca	tysiąca	tysiąca	tysiąca	tysiąca
Dat	tysiącu	tysiącu	tysiącu	tysiącu	tysiącowi
Inst	tysiącem	tysiącem	tysiącem	tysiącem	tysiącem
Loc	tysiącu	tysiącu	tysiącu	tysiącu	tysiącu

Table 8a. Tysiąc “*thousand*.”

	Plural				
	15th/16th c.	17th c.	18th c.	19th c.	21st c.
Nom	tysiące	tysiące	tysiące	tysiące	tysiące
Acc	tysiące	tysiące	tysiące	tysiące	tysiące
Gen	tysiącow/tysięcy	tysiąców/tysięcy	tysiąców/tysięcy	tysiąców/tysięcy	tysięcy
Dat	tysiącom	tysiącom	tysiącom	tysiącom	tysiącom
Inst	tysiącami	tysiącami	tysiącami	tysiącami	tysiącami
Loc	tysiącach tysiącoch tysięcy	tysiącach	tysiącach	tysiącach	tysiącach

Table 8b. Tysiąc “*thousand*.”

	Dual				
	15th/16th c.	17th c.	18th c.	19th c.	21st c.
Nom	tysiąca	tysiąca/tysiące	(same as plural)	(same as plural)	(same as plural)
Acc	tysiąca	tysiąca/tysiące			
Gen	tysiącu	(same as plural)			
Dat	tysiącoma				
Inst	tysiącoma				
Loc	tysiącu				

Table 8c. Tysiąc “*thousand*.”

The reasons behind the almost unchanged¹³ paradigm of *tysiąc* are quite clear, i.e., with all the changes that we have witnessed in the numeral paradigms, the innovations always affected the lower simple numerals first, subsequently the higher ones,

13 Malinowski (1869–1870, 462) reported that *tysiąc* does not have dual, and declines solely in the plural, but we can see that this was already the case in evidence drawn from the 17th c. texts, where the only dual forms are Nom and Acc, and the remaining cases are identical to the plural. In the 19th c. even Nom and Acc forms are plural.

and only infiltrated their compounds later once the changes within their paradigms were established.¹⁴ This is also the reason why the process of numeralization has so far taken over five centuries in Polish, and one of my goals here is to show that it is still an ongoing process and very much alive.

While we see almost no paradigmatic changes with *tysiąc* “thousand,” we already see some crucial changes in its syntax, which is why I will argue below that it is in the syntax that numeralization happens despite the original trigger being paradigmatic (the Acc/Gen syncretism). In particular, *tysiąc* behaves differently when used in isolation, and can have the meaning of both a concrete number, as well as the meaning of an approximate large number (similarly to *sto*). Additionally, it takes on different inflection when part of compounds, in particular in multiplications in which it is counted itself, e.g., *trzy tysiące* “three thousand,” *pięć tysięcy* “five thousand.” The best piece of evidence comes from the co-occurrence of *tysiąc* with the so-called distributive *po*. As argued by Przepiórkowski (2006, 2008, 2010), distributive *po* selects two types of complements, numeral expressions and noun phrases, and marks each with a different case, Acc for the numerals and Loc for the nouns.¹⁵ *Tysiąc* allows both, but crucially in different contexts. Compare the following examples:

- (2) (a) Dostaliśmy *po* (jednej) kanapce.
 got_{1.PL} **po** (one_{LOC.SG}) sandwich_{LOC.SG}
 “We got one sandwich each.”
- (b) Dostaliśmy *po* *dwóch kanapkach/ dwie kanapki
 got_{1.PL} **po** two_{LOC.SG} sandwiches_{LOC.PL}/ two_{ACC.SG} sandwiches_{ACC.PL}
 “We got two sandwiches each.”
- (c) Dostaliśmy *po* *pięciu kanapkach/ pięć kanapek.
 got_{1.PL} **po** five_{LOC.SG} sandwiches_{LOC.PL}/ five_{ACC.SG} sandwiches_{GEN.PL}
 “We got five sandwiches each.”

14 It has also been argued by Corbett (1978) that the higher the numeral, the higher the level of its “nouniness.”

15 In his latest publication, Przepiórkowski (2010) argues that there are two different lexical items *po* in Polish: (i) a preposition that checks Loc, and (ii) an adnumeral operator that checks Acc. Whether *po* is indeed one or two different lexical items is inconsequential to the analysis pursued here, because the conclusions go through on either view, i.e., whenever *tysiąc* bears Acc it is selected by the adnumeral operator, and thus treated as a numeral, and not a noun, and whenever it bears Loc it has been selected by the preposition and is thus nominal; all in all, the same conclusion follows.

We can see that numeral expressions do not allow Loc case-marking, which is reserved for unquantified nominal expressions. The same applies to constructions with *tysiąc*. When used alone, it is treated as a noun, and even when it takes a complement it can still pass for a noun (which makes it different from *sto*, and more similar to measure nouns); but when it is multiplied, the whole construct is perceived by *po* as numeral and therefore case-marked Acc accordingly.

- (3) (a) Dostaliśmy po tysiącu/ *tysiąc.¹⁶
 got_{1,PL} **po** thousand_{LOC.SG}/ *thousand_{ACC.SG}
 “We got a thousand each.”
- (b) Dostaliśmy po tysiącu dolarów/ tysiąc dolarów.
 got_{1,PL} **po** thousand_{LOC.SG} dollars_{GEN.PL}/ thousand_{ACC.SG} dollars_{GEN.PL}
 “We got a thousand dollars each.”
- (c) Dostaliśmy po *dwóch tysiącach/ dwa tysiące (dolarów).
 got_{1,PL} **po** *two_{LOC.SG} thousands_{LOC.PL}/ two_{ACC.SG} thousands_{ACC.PL} (dollars_{GEN.PL})
 “We got two thousand (dollars) each.”
- (d) Dostaliśmy po *pięciu tysiącach/ pięć tysięcy (dolarów).
 got_{1,PL} **po** *five_{LOC.SG} thousands_{LOC.PL}/ five_{ACC.SG} thousands_{GEN.PL} (dollars_{GEN.PL})
 “We got five thousand (dollars) each.”

The pattern that emerges here is the following: *tysiąc* is treated as a noun as long as it is not counted itself and does not form part of a compound numeral. It differs here from *sto*, which is only allowed nominal behavior in isolation and the moment it takes a complement (counted noun) it must be treated as numeral. We can predict that this will be the next stage in the numeralization of *tysiąc*. The changes I am talking about here have started quite early, because I found an example with the bare numeral *tysiąc* selected by *po* already in *Biblia Gdańska* (1632) (hence BG), given in (4). Altogether there were five similar examples, four of which had *tysiąc* bearing Loc. One can see that then already the distributive *po* distinguished between nouns and numerals, because the distinction is replicated with numerals 5–9 and their compounds with *dziesięć*, as well as *sto*, given in (5), which naturally must have been the precursors here.

16 The Acc form of *tysiąc* can be grammatical if the context is known and we know the counted noun (as in 3b); the nominal Loc *tysiącu* does not need such a context, because in isolation it is understood as referring to money.

- (4) Czasz też złotych dwadzieścia, ważących po **tysiąc** łótów
 goblets_{GEN} also golden_{GEN} twenty_{NOM/ACC} weighing *po* thousand_{ACC} lots_{GEN}
 “also twenty golden goblets, weighing a thousand lots each” (BG Ezra 8:27)
- (5) (a) po **pięć** syklów na każdą głowę
 po five_{ACC.SG} shekels_{GEN.PL} on every_{ACC.SG.F} head_{ACC.SG.F}
 “five shekels each on every head” (BG Num 3:47)
- (b) wszystkich jablek granatowych było po **sto** na siatce w około
 all_{GEN.PL} pomegranates_{GEN.PL} was po hundred_{ACC.SG} on net_{LOC.SG} in around
 “there were a hundred pomegranates each on the surrounding net” (BG Jer 52:23)

The last thing to note about *tysiąc* is that it does not have the distinct virile and non-virile forms, and this is purely due to its still very strong nominal nature. Morphologically, it remains a masculine noun (non-virile in the plural), but as we have seen above, syntactically it is already undergoing changes that earlier affected the other bases *sto* and *dziesięć*. Unless Polish goes in the direction of Serbo-Croatian or spoken Czech, in which numerals ≥ 5 are indeclinable, we can expect that it will also undergo numeralization. Nevertheless, judging by the stage at which *tysiąc* is now and the length of the process, we will probably not witness it ourselves.

3. Numeralization of Numeral Names

In view of the above discussion of historical data and the proposal to be advanced here, one must realize that exhibiting the gender distinctions of the plural nouns (virile/non-virile), be it by pronouns, numerals or even adjectives, meant different things for these different lexical categories. If we assume, as mentioned earlier, that the gender features of nouns do not project, but rather are introduced via an existing functional head in their extended projection (Ritter 1993, De Vicenzi 1999, De Vicenzi and Di Domenico 1999), then any lexical item capable of exposing these features should find itself within that extended projection. While this is unproblematic for pronouns¹⁷ and adjectives, as they could always constitute parts of the

17 This is especially so if one assumes a pronominal structure such as the one proposed by Panagiotidis (2002), where pronouns have a fully-fledged DP with NumP (introducing gender and number) and an empty NP within. There are good reasons to believe that the pronominal structure in Polish is as presented by Panagiotidis, rather than the one proposed by Cardinaletti and Starke (1994), which was later implemented by Rutkowski (2002) for Polish. Rutkowski bases his proposal on the co-occurrence of pronouns with higher numerals, proposing (as here) that numerals are in NumP, and following Cardinaletti and Starke in assuming that pronouns are base-generated lower in NP, rather than higher in DP. Since pronouns always precede numerals, they must, according to him, move to DP across NumP. His clinching evidence is the alleged Gen case marking on the pronouns, which are argued to have moved out of the numeral's scope after having received

extended projections of nouns as determiners and/or modifiers, numeral names which were independent nouns with their own set of ϕ -features were in an altogether different situation; this is why entering the extended projection of their counted nouns meant a complete categorial overhaul for numeral names and was accompanied by a crucial change in their syntax. Here, I argue that the head via which the gender features are introduced is Num^o of NumP. The reason for this proposal is based on the empirical evidence presented above, which points to a close connection between number and gender on the one hand, i.e., both are realized together as portmanteau affixes in Polish,¹⁸ and on the other hand between numerals and gender, i.e., the novel gender distinctions introduced in the plural made numerals their category of choice for spell out. The syntactic change, i.e., numeralization, is

Gen case from it. What Rutkowski did not notice is that he has chosen virile pronouns to exemplify his proposal and thus mistakenly taken their Acc forms for Gen ones, forgetting about the Acc/Gen syncretism in the virile. It is enough to substitute a non-virile pronoun in these examples to see that the forms are indeed Acc and not Gen, thus obliterating the alleged evidence.

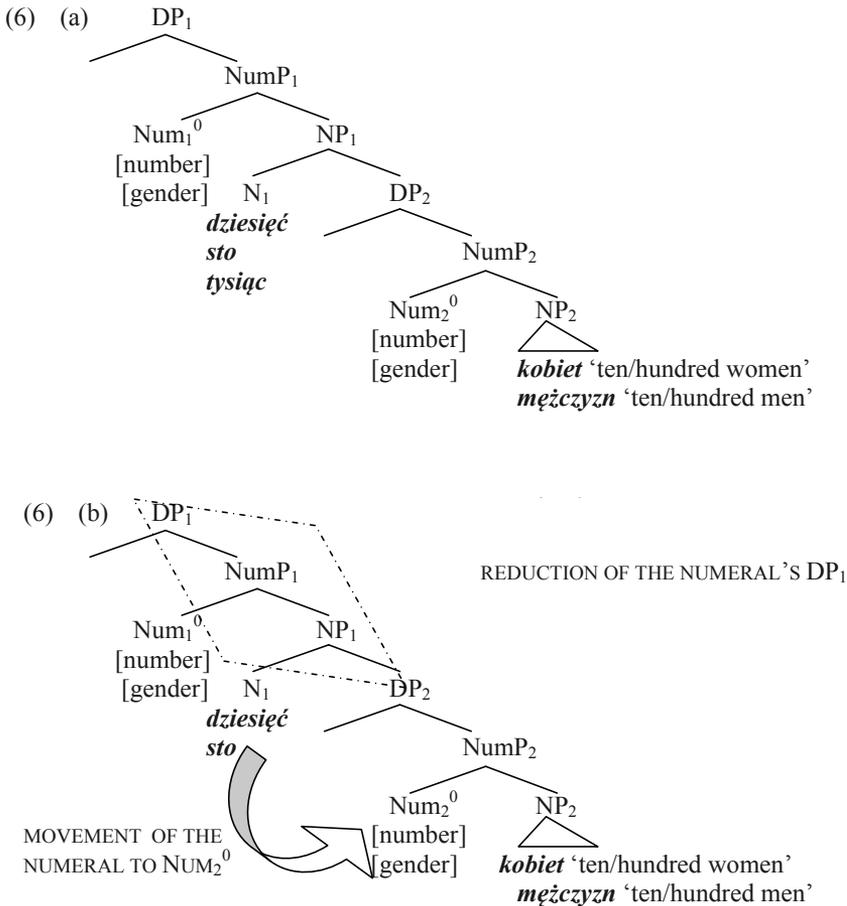
- | | | | | | | | | |
|-----|-----|--|------------------------------------|-----------------------------------|------|-----|--|------------------------------------|
| (i) | (a) | widzę tych
see _{1SG} these _{ACC.PL.V} | pięciu
five _{ACC.SG.V} | mężczyzn
men _{GEN.PL} | (ii) | (a) | widzę ich
see _{1SG} them _{ACC.PL.V} | pięciu
five _{ACC.SG.V} |
| | | “I see these five men.” | | | | | “I see all five of them (men/boys).” | |
| | (b) | widzę te
see _{1SG} these _{ACC.PL.NV} | pięć
five _{ACC.SG.NV} | kobiet
women _{GEN.PL} | | (b) | widzę je
see _{1SG} them _{ACC.PL.NV} | pięć
five _{ACC.SG.NV} |
| | | “I see these five women.” | | | | | “I see all five of them.” | |

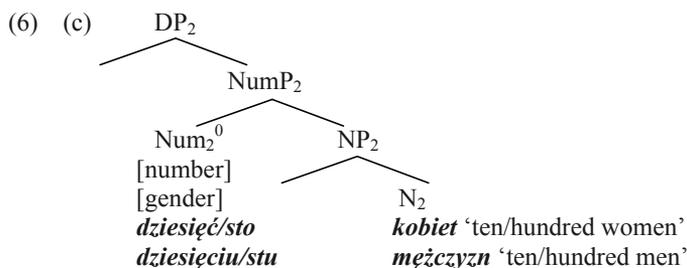
If Rutkowski were right, (i b) and (ii b) should not exist, contrary to facts, and we would expect to see *tych pięć kobiet* in (i b) and *ich pięć* in (ii b). While such forms do exist, they have a partitive reading (see Gvozdanović 1999, 190) and most probably are derived from a biphrasal structure in which the pronoun truly moves out of the scope of the numeral; compare, for instance (iii a) and (iii b), with the latter representing a partitive reading:

- | | | | | |
|-------|-----|--|-----------------------------------|---|
| (iii) | (a) | widzę moje
see _{1SG} my _{ACC.NV} | pięć
five _{ACC.SG.NV} | córek
daughters _{GEN.PL.NV} |
| | | “I see my five daughters.” (I only have five) | | |
| | (b) | widzę moich
see _{1SG} my _{GEN.NV} | pięć
five _{ACC.SG.NV} | córek
daughters _{GEN.PL.NV} |
| | | “I see five of my daughters.” (I have more) | | |

18 Already in Proto-Slavonic we see divisions of nouns into declensions based predominantly on stem and gender (see Laskowski 1988 for a thorough discussion of these issues). For example, the Proto-Slavonic masculine and neuter δ -stems are still represented in Polish, now with viriles showing Acc/Gen syncretism, and non-viriles the Nom/Acc one. Similarly, the feminine and masculine \bar{a} -stems, which nowadays only show the feminine pattern in the singular (even for masculine nouns like *mężczyzna* “man”), but in the plural the viriles regain their Acc/Gen syncretism. That is not to forget our feminine \bar{i} -stems representing the simple numerals 5–9 (this was originally the class to which 3 belonged too, but the neighboring numeral 2 influenced the declension of 3, and later also the consonantal-stem 4, so much that their declension is similar to pronouns).

argued here to have involved reanalysis of the numeral names as functional heads, as a result of which they became lexicalizations of the counted noun's Num^o. This, naturally, brought about the paradigmatic changes in the numeral declension, being the direct cause of the loss of the numerals' own nominal features. Therefore, I propose that the original biphrasal structure in which both the numeral noun and the counted noun projected their respective noun phrases was reduced to a monophrasal structure when numeral names underwent numeralization, i.e., became lexicalizations of the Num^o head (NumP) in the extended projection of the counted noun. Below, I present three structures: one before numeralization representing two stacked DPs (6a), the next one showcasing the numeralization process (6b), and the last one representing the state after reanalysis, with numerals lexicalizing the counted noun's Num^o where the biphrasal structure is reduced to a monophrasal one (6c).





One may notice that I did not put *tysiąc* among the numerals that have undergone numeralization (6b, c), nevertheless the question of how the distributive *po* distinguishes between the numeral *tysiąc* and the nominal one begs for an answer. It seems more than plausible to assume that the difference must be encoded in syntax, as it is also in syntax that it is detectable. I would like to propose tentatively that whenever *tysiąc* is used numerically (i.e., when part of a complex numeral) it occupies its own Num^o. Since it retains its own ϕ -features, there is no way that it could be part of the extended projection of its counted noun. This idea allows us to restrict the selectional properties of the distributive *po*, which could be argued to select a quantifying Num^o.

Numeral names having undergone numeralization enter a new category: numerals. As numerals they form a group of words with a declension specific only to them (generalizing the characteristic *-u* ending). Syntactically, they become part of the extended projection of their counted noun by lexicalizing its Num^o. Due to this they lose once and for all their own ϕ -features and thus become exponents of the gender of their counted noun, i.e., they exhibit the virile/non-virile distinction in the plural. This property makes them similar to other modifiers which exhibit concord with the noun they modify; nevertheless, beyond gender, numerals do not exhibit congruence with their counted nouns: they never agree with them in number,¹⁹ and in structural case contexts (Nom and Acc), they also do not agree with them in case, because in these cases we see that even after reanalysis the numerals have retained their ability to check Gen case on their counted noun. This Gen, however, has also undergone a change: to be precise, it changed from lexical to structural. Again, this follows from the grammaticalization of numerals, i.e., their reanalysis as functional heads. The once nominal numeral names were able to license lexical Gen, a case that to this day is characteristically checked by nouns on their nominal complements, and which remains unaffected by the case context in which the whole struc-

19 This does not have to be necessarily the case, however, if one assumes with Ionin and Matushansky (2006) that the agreement we witness in numeral expressions is strictly semantic, and that the counted nouns must be plural, or else we would be multiplying or adding sums, and not atoms.

ture appears (this is the case *tysiąc* is still able to check). However, upon reanalysis when the lexical head became functional, so did the case it used to check. Structural case is a property of functional heads: T is responsible for Nom, *v* for Acc, and now (lexicalized) Num^o is responsible for Gen. What all these functionally licensed cases have in common is that they are overruled by lexical cases (Babby 1987), which is the reason why we see case-congruence with numeral expressions and their nouns in oblique case-contexts. Compare the completely numeralized *dziesięć* “ten” with the still predominantly nominal *tysiąc* “thousand”:

“a thousand zlotys” (Sg.M)		“ten thousand zlotys” (Pl.NV)	
Nom	tysiąc _{NOM}	złotych _{GEN}	dziesięć _{NOM/ACC} tysięcy _{GEN}
Acc	tysiąc _{ACC}		
Gen	tysiąca _{GEN}		dziesięć _{GEN} tysięcy _{GEN}
Dat	tysiącowi _{DAT}		dziesięć _{DAT} tysiącom _{DAT}
Inst	tysiącem _{INST}		dziesięć _{INST} tysiącami _{INST}
Loc	tysiącu _{LOC}		dziesięć _{LOC} tysiącach _{LOC}

Table 9. *Lexical vs. structural Gen checked by tysiąc and dziesięć respectively*

As we can see, *tysiąc* checks lexical Gen on its complement *złotych* without exception, whether it is nominal or numeral; however, in the case of *dziesięć* we can only see Gen on its complement (*tysiąc*) in structural cases, and in the remaining oblique case-contexts we see that the structural Gen on *tysiąc* is trumped by the lexical Gen/Dat/Inst/Loc. There are, however, good reasons to believe that the relation we see in structural case-contexts is the rule rather than an exception and can be explained via case-inclusion analyses such as those proposed by Caha (2009) and Matushansky (2010), as I also argued in Miechowicz-Mathiasen (2012).²⁰

4. Conclusion

In this chapter I have argued that Polish numeral names have undergone a process of numeralization as a result of which they have formed a new category with a declensional pattern specific only to it. The process has been triggered by paradigmatic changes that did not directly concern numeral names, but rather their

²⁰ In Miechowicz-Mathiasen (2012) I propose that this effect of encapsulation of the true relations is due to the complexity of case-features; in particular, I assume a version of case inclusion (one implementation of such an approach is presented in Caha 2009, a different one in Matushansky 2010), i.e., I assume cases to be complexes of features, such that the more complex case is a composite of a less complex one and some feature in accordance with Blake’s hierarchy (which Caha 2009 successfully derives). Then the fact that oblique cases like DAT, INST or LOC overrule ACC and GEN is because they are the more complex cases and because only the most complex feature is realized at the interface (i.e., a vocabulary item realizing the highest feature is inserted).

nominal complements. The change in question involved a new gender distinction in the plural (virile vs. non-virile) which came to be realized via an innovative Acc/Gen syncretism. As nouns had no way of implementing the gender distinctions themselves, they depended on their modifiers to become exponents of the new distinctions. As pointed out by various language historians, it was exactly in adnumeral contexts that nouns could first exhibit the innovation. I have thus conducted an investigation thanks to which I have not only confirmed their findings, but also found out that apart from numerals pronouns were also pioneering the new syncretism in the plural. Although one look at the Polish gender system can lead one to believe that gender should not be assumed as an intrinsic feature of the noun itself (but rather belongs in its functional layer), I tested this hypothesis against a bulk of historical evidence to conclude that indeed the process of introducing the new gender distinctions in the plural via the Acc/Gen syncretism for nearly two centuries affected every possible nominal modifier except the nouns themselves, and it was only as the very last step that the nouns themselves could exhibit the syncretism without proxies. Therefore, following ideas presented in Ritter (1993), and supported by experimental studies such as De Vicenzi (1999) and De Vicenzi and Di Domenico (1999), according to which gender is a category parasitic on an existing syntactic head, I proposed two things: first, that the head on which gender is dependent is Num of NumP in Polish (due to the close connection between number and gender, which are expressed together in the form of portmanteau affixes on nouns); and second, that the numeral names have undergone numeralization to become exponents of the gender distinctions of their counted nouns. This grammaticalization process resulted in: (i) the loss of their own ϕ -features; and (ii) entering the noun's extended projection by lexicalizing its functional head Num^o. Assuming Num^o is the head introducing both number and gender, this accounted for how they managed to expose the gender of the counted noun, as well as shed light on their own syntactic and paradigmatic changes. The new category of numerals thus belongs to functional lexical items and its functional status has been further supported by a similar change that affected its case-marking capacity, namely the once lexical Gen that numerals marked on their counted nouns has changed into structural Gen.

Chapter Four

Marcin Wągiel

Boys, Girls, and Scissors: A Semantic Analysis of Polish NPs Headed by the Numeral *Dwoje*

1. Introduction

It is well known that Slavic languages have a rich derivational morphology for numerals.¹ Although there is a lot of literature on the syntax of Polish numerals, so far their semantic properties have not been studied in detail. In this chapter I present novel data showing interesting constraints on the distribution of two types of Polish numerals, namely basic cardinal numerals, e.g., *dwaj* (“two”), and numerals with the suffix *-e*, e.g., *dwoje* (“two”).² I will argue that morphologically complex numerals such as *dwoje* are compositional and I will propose a formal semantic analysis of NPs containing Polish *-e* numerals that explains how their behavior follows on from their semantics. Moreover, I will discuss the semantic contribution of particular morphemes and explain why combinations of *-e* numerals with some nouns are semantically anomalous.

The outline of the chapter is as follows. In Section 2 I present some puzzling facts about the complementary distribution of Polish basic cardinal numerals and numerals with the suffix *-e*. In Section 3 I introduce the theoretical framework of Landman (2000), which can be used to model plural expressions in natural languages. In Section 4 I argue in favor of the compositionality of Polish numerals

1 I would like to sincerely thank Mojmir Dočekal, two anonymous reviewers, and the audience at the Olinco 2013 conference for their helpful comments and questions.

2 In traditional Polish linguistics such numerals are often called collective numerals (*liczebniki zbiorowe*). However, since they have no impact on the collectivity of the sentence in which they occur, I consider this term misleading and I will therefore address them as numerals with the suffix *-e* or simply *-e* numerals.

with the suffix *-e* and I propose formal semantic interpretations of NPs headed by the numeral *dwoje* in three contexts discussed in Section 2. Section 5 gives the conclusion.

2. Data

In general, numerals in natural languages can count objects (individuals), e.g., *two boys*, events, e.g., *Peter jumped twice*, or degrees on different scales, e.g., *two metres*. Polish (just like many other Slavic languages) has a productive system of semantically driven derivational morphology for numerals counting objects. The system consists of four different classes of numerals:

- basic cardinal numerals

- (1) *dwaj* *chłopcy*
 two_{V,NOM} boys_{NOM}
 “two boys”

- numerals with the suffix *-e*

- (2) *dwoje* *ludzi*
 two_{NON-CARD} people_{GEN}
 “two people (one male and one female)”

- numerals with the suffix *-k-*

- (3) *dwójka* *chłopców*
 two_{NON-CARD} boys_{GEN}
 “a group of two boys”

- numerals with the suffix *-ak-*

- (4) *dwojaki* *wino*
 two_{NON-CARD} wine_{NOM}
 “two kinds of wine”

As can be seen from the translations in (1)–(4), derivationally complex numerals such as *dwoje*, *dwójka*, and *dwojaki* quantify over some specified types of entities, unlike basic cardinal numerals such as *dwaj* that simply count individuals in the denotation of the modified noun. It is, thus, legitimate to assume that different suffixes attached to the same root modify the meaning of the numeral in the way that they introduce some additional truth conditions. For example, *dwójka* in (3)

interprets the individuals being counted as a plural entity that acts collectively to form a group, whereas *dwojacie* in (4) does not count any atoms, but rather sub-kinds of the entity denoted by the noun. In this chapter I will focus on the semantic properties of Polish numerals with the suffix *-e*, exemplified in the text by the numeral *dwoje* (“two”).

Similar numerals can be found in other Slavic languages as well, e.g., in Czech, Slovak, Serbian, Croatian, and Russian. In this case, however, morphology may be very misleading since the semantic behavior of *-e* numerals in the languages mentioned above varies significantly. Nevertheless, at least some of the ideas developed in this chapter might be applied to the semantic analysis of *-e* numerals in other Slavic languages.³

Syntactically, Polish numerals with the suffix *-e* seem to behave like higher cardinal numerals 5+, i.e. they check GEN case on nouns in structural cases and force plural marking on them. Perhaps it is reasonable to assume that *-e* numerals lexicalize the head of NumP, as proposed for higher cardinal numerals in Miechowicz-Mathiasen (2012). In this chapter, however, I will remain agnostic about the syntactic properties of Polish *-e* numerals.⁴ Nonetheless, for the purposes of this analysis I will address expressions such as (2) as “NPs headed by numerals with the suffix *-e*,” although the term “head” is not used here in the usual sense.

In the following subsections I will address three issues. First, I will present the morphological make-up of Polish *-e* numerals. Second, I will introduce some puzzling facts concerning the complementary distribution of basic cardinal numerals and numerals with the suffix *-e*. Finally, I will present empirical evidence that NPs headed by *-e* numerals are ambiguous between collective and distributive reading.

2.1 Morphology

I assume the following morphological make-up of *-e* numerals:

- (5) *dw-oj-e*
 root-non_cardinal_stem-derivational_suffix

Note that in case of numerals 4+, e.g., *czworo* (“four”), the non-cardinal stem is *-or-* and the derivational suffix is *-o*. Both *-oj-/or-* and *-e/-o* are allomorphs, but for the sake of clarity I will continue to address the numerals *dwoje* and *czworo* as

³ A formal interpretation of sentences containing Czech numerals with the suffix *-e* in object positions was proposed in Dočekal (2012). I am unaware of similar analyses for other Slavic languages.

⁴ The literature on the syntax of Slavic numerals is vast and I am unfamiliar with all its intricacies. Hence, I leave syntactic aspects of the analysis for future research.

numerals with the suffix *-e* or simply *-e* numerals. It should also be noted that the suffix *-e/-o* is very productive and can derive morphologically complex numerals from basic cardinal numerals from 2 up to 99 (*dziewięćdziesięcioro dziewięćcioro*). However, the usage of *-e* numerals in Polish seems to fade and many speakers prefer to use other numerals instead. In many contexts, nonetheless, their frequency still seems to be relatively high (Saloni 2009).

2.2 Distribution

Polish *dwoje* (and other numerals with the suffix *-e*) can combine only with i) plurale tantum nouns, ii) NPs denoting immature creatures, and iii) NPs denoting collections of mature creatures consisting of both male and female individuals.

- (6) (a) *dwoje* *nożyczek*
 *two*_{NON-CARD} *scissors*_{GEN}
 “two pairs of scissors”
- (b) *dwoje* *dzieci*
 *two*_{NON-CARD} *children*_{GEN}
 “two children”
- (c) *dwoje* *studentów*
 *two*_{NON-CARD} *students*_{GEN}
 “two students (one male and one female)”

Interestingly, basic cardinal numerals never appear in these contexts:

- (7) (a) **dwa* *nożyczki*
 *two*_{NV.NOM} *scissors*_{NOM}
- (b) **dwa* *dzieci*
 *two*_{NV.NOM} *children*_{NOM}
- (c) *dwoje* *studentów* = one male and one female
 *two*_{NON-CARD} *students*_{GEN}
- (d) *dwaj* *studenci* = male students only or indefinite
 *two*_{V.NOM} *students*_{V.NOM}
- (e) *dwie* *studentki* = female students only
 *two*_{F.NOM} *students*_{F.NOM}

Note that NPs like (7c) are not indeterminate with respect to the natural gender of counted entities. Such phrases are interpreted as denoting collections of creatures including at least one male and one female representative of beings denoted by the noun. This property of *-e* numerals is even more evident in adjunct position:

- (8) Byliśmy tylko we dwoje.
 be_{L.PL.PAST} just in two_{NON-CARD}
 “It was just the two of us.”

A sentence such as (8) would be true only in a scenario in which the speaker was accompanied by a person of the opposite gender. It would never be understood in the manner that it is unknown whether the speaker’s companion was male or female.

Furthermore, *dwoje* cannot appear within NPs unambiguously denoting collections of mature individuals of the same gender:⁵

- (9) (a) #dwoje mężczyzn
 two_{NON-CARD} men_{GEN}
- (b) #dwoje kobiet
 two_{NON-CARD} women_{GEN}

At the same time, NPs headed by *dwoje* that denote collections of immature creatures are indefinite with respect to the natural gender of denoted beings, i.e. an NP such as (6b) can denote either one boy and one girl, two boys, or two girls.

Since there are no syntactic reasons for the constraints presented above, it is plausible to assume that the distribution of numerals with the suffix *-e* follows from their semantics. The attempt to formally capture all of the facts discussed in this section is the main aim of this chapter.

2.3 Collectivity and Distributivity

Similarly to English phrases such as *two students*, Polish NPs headed by *-e* numerals are ambiguous with respect to distributivity and collectivity. In most cases sentences containing such NPs can have either collective or distributive interpretation:

5 In Polish many masculine nouns such as *studenci* (“students”) either denote collections of male creatures or can be indeterminate with respect to the natural gender of denoted individuals. On the other hand feminine nouns, e.g., *studentki* (“female students”), and masculine nouns such as *mężczyźni* (“men”) always denote only female or male creatures respectively.

- (10) Dwoje studentów upiekło ciasto.
 two_{NON-CARD} students_{GEN} baked_{3.SG.N} cake_{ACC}
 “Two students (one male and one female) baked a cake.”

Sentences such as (10) are usually interpreted as meaning that a total of one cake was baked, i.e. that the students worked together to bake one cake. This kind of reading is called the collective interpretation. Nevertheless, there is also another reading of (10) in which the total of baked cakes is two, i.e. as if each student had baked a cake on their own. This reading is called the distributive interpretation since the individuals denoted by the NP in object position are distributed onto the individuals denoted by the NP in subject position. The collective interpretation of sentences like (10) is definitely a preferable one,⁶ but in some contexts the distributive reading can become more salient or even dominant:

- (11) Pięćdziesięcioro studentów złowiło rybę.
 fifty_{NON-CARD} students_{GEN} caught_{3.SG.N} fish_{ACC}
 “Fifty students (male and female) caught a fish.”

Since catching a fish is usually a self-reliant activity, it is very unlikely that it took as many as fifty students to catch only one fish (assuming that the students were not trying to harpoon a whale shark). Hence, (11) is more likely to be interpreted distributively in the first place, i.e., as if each student caught a fish so that a total of fifty fish was caught.

The ambiguity between collective and distributive readings can be found in all other cases of NPs containing a numeral with the suffix *-e*:

- (12) (a) Dwoje dzieci zjadło ciasto.
 two_{NON-CARD} children_{GEN} ate_{3.SG.N} cake_{ACC}
 “Two children ate a cake.”
- (b) Dwoje nożyczek wycięło obrazek.
 two_{NON-CARD} scissors_{GEN} cut_{3.SG.N} picture_{ACC}
 “A picture was cut with two pairs of scissors.”

6 A possible explanation for this preference might be the fact that Polish has a means to disambiguate predicates that are ambiguous between collective and distributive readings, namely the so-called distributive *po*, e.g., *Dwoje studentów upiekło po cieście* (“Two students [one male and one female] baked a cake each”). It might be the case that some kind of competition story is taking place here. However, I will remain agnostic as to the real reason for this preference.

Both sentences in (12a)–(12b) are ambiguous between collective and distributive reading, i.e. (12a) is true either in the scenario that a total of two cakes were eaten or that there was only one cake that two children ate. Similarly, (12b) can mean that each pair of scissors cut one picture so there are two pictures that were cut or that there is only one.

An adequate semantic analysis of Polish NPs headed by numerals with the suffix *-e* should capture the empirical facts presented above. For this purpose, appropriate theoretical tools will be introduced in the next section.

3. Theoretical Background

It has been recently proposed by Dočekal (2012, 2013) that Slavic derivationally complex numerals display in their morphology the shifting operators postulated in the theories of Landman (e.g., 1989) and Chierchia (1998). It has been shown that Landman’s plurality framework is an adequate approach that provides a means for a unified analysis of different classes of Slavic numerals. For this reason I adopt the theory of Landman (2000) to propose a semantic interpretation of Polish NPs headed by *dwoje*.

3.1 Lattice Theoretic Treatment of Plurality

First of all I will introduce the notion of the Boolean semi-lattice, which is defined as a partially ordered set which has a join for any non-empty finite subset. The domain of the semi-lattice is partially ordered by \sqsubseteq , the part-of relation, and closed under \sqcup , the typical sum (join) operation. Let us now assume a Boolean domain containing three individuals $\{a, b, c\}$, as shown in Figure 1.

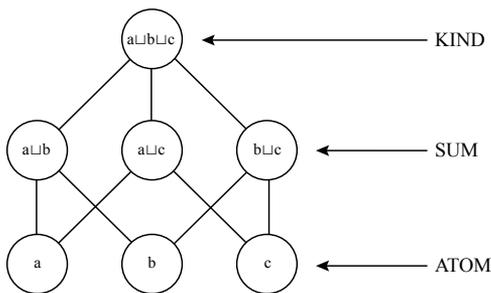


Figure 1. *Semi-lattice*

The individuals on the bottom line of the semi-lattice are singularities and they constitute the atoms of the model. The level of atoms prototypically corresponds

to the meaning of singular nouns such as *boy*. The individuals above the singularities are plural entities, i.e. sums of atoms. In most cases this level can be used to represent the denotation of plural nouns such as *boys*. Finally, the uppermost level is a supremum. Since it is a maximal entity which is constituted of the sum of all atoms in the domain, it corresponds to the concept of kind (Chierchia 1998) in natural language and it can be used to capture the meaning of generic expressions such as *Boys are male*, *Dinosaurs are extinct* etc.

For reasons of space, I will omit formal axioms of the model—they can be found in the plurality theories developed in Link (1983) and Landman (2000). There are, however, two theoretical tools we need to introduce formally in order to account for the semantics of *dwoje*. The first one is $*$, the pluralization operator postulated in the semantic theory of Link (1983). According to Link's framework, singular predicates denote sets of singular entities only. Thus, in a universe in which there are only three boys, e.g., Adam, Ben, and Carl, the predicate BOY would denote a set of atoms of the semi-lattice $\{a, b, c\}$. However, to deal with plural on nouns, Link introduces the pluralization operation $*$, which can be formally defined as a closure under sum:

$$(13) \ *BOY = \{d \in D: \text{for some non-empty } X \subseteq BOY: d = \sqcup X\}$$

A pluralized predicate $*BOY$ adds to the extension of BOY all the possible sums that could be obtained by joining the atoms of the model. In the universe assumed above it would denote the set $\{a, b, c, a \sqcup b, a \sqcup c, b \sqcup c, a \sqcup b \sqcup c\}$.

The second formal tool we need in the analysis is the group-forming operator \uparrow , introduced in the theory of Landman (1989). A group-forming operation maps a sum onto a group, i.e. an atomic individual in its own right. A formal definition of \uparrow is presented in (14) and Figure 2 illustrates exactly how the group-forming operation works.

(14) \uparrow is a one-one function from SUM into ATOM such that:

1. $\forall d \in \text{SUM-IND } \uparrow(d) \in \text{GROUP}$
2. $\forall d \in \text{IND}: \uparrow(d) = d$

\downarrow is a function from ATOM onto SUM such that:

1. $\forall d \in \text{SUM } \downarrow(\uparrow(d)) = d$
2. $\forall d \in \text{IND}: \downarrow(d) = d$

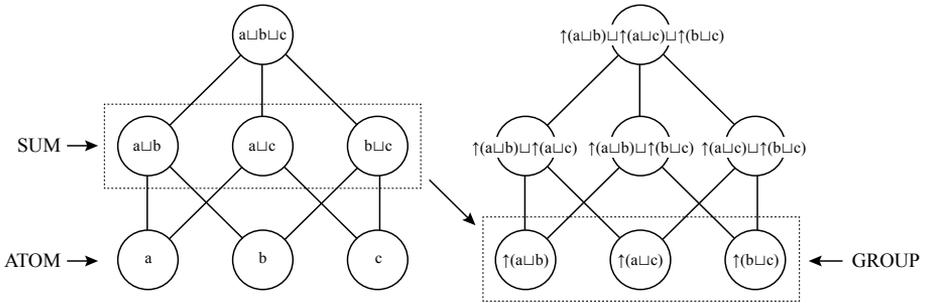


Figure 2. Group-forming operation

The \uparrow operator takes a sum as an argument and as a result it gives back a group. In other words, it “petrifies” a plural individual from the level of sums and drops it down to the level of atoms. Although the internal structure of such an entity is complex, it is not accessible and the group behaves as an atomic individual, i.e. a group-atom. As a result groups can be joined to create sums and since the group-forming operation is recursive, newly created sums can also be mapped onto group-atoms etc. The group-deforming operator \downarrow does exactly the opposite, i.e. it takes a group as an argument and returns a sum.

3.2 Interpretation of Noun Phrases

Unlike in the standard Generalized Quantifiers framework of Barwise and Cooper (1981), where the treatment of all NPs is uniform, in the theory of Landman (1997) quantificational and non-quantificational noun phrases are treated differently. The class of non-quantificational NPs includes indefinites, definites, numeral-headed noun phrases, and proper names. The distinction between these two classes is mainly motivated by the empirical observation that sentences containing quantificational NPs, such as *every boy* or *no girl*, are interpreted as unambiguously distributive and cannot combine with collective predicates, as can be witnessed by the ungrammaticality of **Every girl met in Olomouc*. On the other hand, non-quantificational NPs are usually ambiguous between the collective and distributive interpretation.

For Landman non-quantificational NPs, such as *John and Mary* and *three boys*, are able to shift their interpretation from the sum level in the domain of individuals to the level of groups freely:

(15) (a) *John and Mary* \rightarrow $j\sqcup m, \uparrow(j\sqcup m)$

(b) *three boys* \rightarrow $\lambda P.\exists x \in *BOY: |x| = 3 \wedge P(x)$ (sum)
 \rightarrow $\lambda P.\exists x \in *BOY: |x| = 3 \wedge P(\uparrow(x))$ (group)

Both (15a) and (15b) have two interpretations. (15a) can denote either the sum or group of John and Mary, whereas (15b) denotes either the set of all the properties that the sum of the three boys has or the set of all the properties that the group of three boys has. Since distributivity is a type of plural predication and collectivity is a type of singular predication (Landman 2000), the sum interpretations of (15a)–(15b) correspond to the distributive reading of sentences in which such NPs occur, while the group interpretations correspond to the collective reading of such sentences.

In contrast to non-quantificational noun phrases, in the framework of Landman (1997) quantificational NPs get their standard interpretation:

(16) (a) *every girl* $\rightarrow \lambda P. \forall x \in \text{GIRL}: P(x)$

(b) *no girl* $\rightarrow \lambda P. \forall x \in \text{GIRL}: \neg P(x)$

As one can see in (16a)–(16b), interpretations of quantificational NPs are obligatorily atomic, which results in the distributive reading of the whole sentences in which they appear, e.g., *Every boy baked a cake* necessarily means that the total number of cakes is equal to the total number of boys and it is not the case that only one cake was baked.

4. Proposal

On the basis of the distributional facts discussed in Section 2 I will argue that Polish numerals with the suffix *-e* are compositional. The core proposal of this chapter is the idea that it is always the root that defines the cardinality of counted entities; different suffixes, however, specify what type of entity is counted. This approach could be extended to any class of Polish numerals; in this study, however, I propose a semantic interpretation of NPs headed by *-e* numerals. The analysis uses the formal tools introduced in Section 3.

An analysis of the distributional contexts in which *-e* numerals can appear leads to the observation that there are three types of the numeral *dwoje*. Let us call them classifying *dwoje*, e.g., *dwoje drzwi* (“two doors”), *dwoje* denoting immature creatures, e.g., *dwoje dzieci* (“two children”), and *dwoje* denoting mixed gender, e.g., *dwoje ludzi* (“two people [one male and one female]”).

4.1 Classifying *Dwoje*

Classifying *-e* numerals take as their complements nouns that denote complete semi-lattices. In this study I will follow the definition of a complete semi-lattice formulated in Bale and Khanjian (2009) and introduced in (17). In their notation \vee is a typical sum (join) operator and it corresponds to \sqcup in the theory of Landman, introduced in Section 3. On the other hand, \wedge is a typical meet operator.

- (17) **Complete semi-lattice:** a denotation X is a complete semi-lattice iff for all members y and z of X , $y \vee z$ is a member of X and, if $y \wedge z$ is not the empty group (\emptyset), then $y \wedge z$ is a member of X .

According to (17), the denotation of the noun *snow* is a complete semi-lattice, because it consists not only of atoms (the units of snow or snowflakes) but also of any possible sums formed from these atoms (portions of snow). For example, if the units of snow in a given context were x , y , and z , then the denotation of *snow* would be $\{x, y, z, x \sqcup y, x \sqcup z, y \sqcup z, x \sqcup y \sqcup z\}$. In this case union of any two members of the denotation is itself a member of the denotation. The intersection of any two members is either the empty set (in the case of $x \wedge y$, $x \wedge z$, and $y \wedge z$) or it is a member of the denotation as well (in all other cases).

In Polish there are two types of nouns that have complete semi-lattices in their denotation: mass nouns and pluralia tantum.⁷ Though plurale tantum nouns have no singular forms at all, they allow for singular quantification in any context:

- (18) Nożyczki leżały na stole.
 scissors lay_{3.PL.NV} on table_{LOC}
 “The scissors were on the table.”

Sentences such as (18) are ambiguous between singular and plural readings. (18) does not necessarily mean that there were several pairs of scissors on the table. In fact, in most contexts the preferred interpretation is that there was only one pair of scissors on the table. This property of pluralia tantum provides evidence that their denotation consists not only of plural entities, but also of singular atoms. It is, thus, a complete semi-lattice.

Let us now consider the semantics of the exemplary phrase *dwoje nożyczek* (“two pairs of scissors”) from (6a). The semantic interpretation of the NP is the following one:

- (19) (a) $\llbracket \text{dwoje nożyczek} \rrbracket = \lambda P. \exists x \in *SCISSORS: |x| = 2 \wedge P(x)$
 (b) $\llbracket \text{dwoje nożyczek} \rrbracket = \lambda P. \exists x \in *SCISSORS: |x| = 2 \wedge P(\uparrow(x))$

7 Although there is some empirical evidence that Polish bare plurals generally have complete semi-lattices in their denotation, in this study I will remain agnostic about this issue. Nevertheless, it should be mentioned that in downward-entailing contexts Polish bare plurals allow for singular quantification. Consider a question such as *Czy masz dzieci?* (“Do you have children?”). Though the noun *dzieci* (“children”) in object position is plural, the answer to such a question would be *yes* even if you have only one child. This fact would be extremely difficult to explain if there were only sums and no atoms in the denotation of a plural noun. However, a detailed discussion of this issue lies beyond the scope of this chapter and in this analysis I will assume that only plurale tantum nouns intrinsically denote complete semi-lattices.

(19a) represents the set of all the properties that the sum of two pairs of scissors has and it corresponds to the distributive reading of (12b), whereas (19b) represents the set of all the properties that the group of two pairs of scissors has, which corresponds to the collective reading of (12b).

The semantic contribution of particular morphemes can be informally described as in (20). Note that in this study I assume that the non-cardinal stem *-oj-* is semantically vacuous.

(20) (a) *dw-* → the cardinality of counted atoms equals 2

(b) *-e* → counted entities must be atoms in the denotation of the NP

It is the root that determines the cardinality of the scissors in (19); the morpheme *-oj-* has no semantic contribution and the suffix *-e* defines individuals counted by the root as atoms of the complete semi-lattice denoted by the noun.

The semantic interpretation of NPs headed by classifying *dwoje* does not differ from that of NPs containing basic cardinal numerals.⁸ The only function of the suffix *-e* in this case is to define the root as counting singular entities from the level of atoms in the denotation of pluralia tantum. In other words, the morpheme *-e* allows the numeral to combine with nouns denoting a complete semi-lattice.⁹ Since basic cardinal numerals can never modify such nouns, it seems as if the suffix *-e* in NPs counting objects denoted by pluralia tantum behaves somewhat like a classifier.

4.2 *Dwoje* Denoting Immature Creatures

The second context examined in Section 2 concerned combinations of *dwoje* with NPs denoting immature animate beings. In this case the root again defines the cardinality of counted entities. The suffix *-e*, however, introduces a specific require-

8 As an anonymous reviewer points out, Czech numerals with the suffix *-e* behave differently. Although they do combine with pluralia tantum to allow for their quantification, they can also combine with regular count nouns denoting inanimate entities, which is impossible in Polish, cf. Czech *dwoje klíče* (“two bunches of keys”) vs. Polish **dwoje kluczy*. In the Czech phrase, the numeral counts sums consisting of an unspecified cardinality of objects (Dočekal 2012). Polish *-e* numerals lack this property and can only count atoms. Moreover, it might be worth mentioning that what all Slavic *-e* numerals seem to have in common is that they all combine with pluralia tantum nouns to allow for their quantification. Nevertheless, the proper interpretation of this issue undoubtedly requires further investigation that lies beyond the scope of this chapter.

9 As mentioned before, in Polish there is also another class of nouns that have complete semi-lattices in their denotation, namely mass nouns, which cannot appear as complements of numerals with the suffix *-e*: **dwoje śniegów* (“two snows”). However, it should be noted that syntactically *-e* numerals behave more like bunch nouns and assign GEN.PL case to their complements. Since mass nouns have singular forms only, they simply cannot satisfy the syntactic requirement of *-e* numerals and do not co-occur with them within the same phrase.

ment that counted atoms have to be the elements of the set that is the intersection of the set denoting all immature creatures and the set denoting the type of counted individuals, e.g., children, puppies, or kittens.

To see how it works in detail, let us consider the semantics of a noun phrase denoting a set of immature creatures headed by *dwoje*. (21) gives the semantics of (6b):

- (21) (a) $\llbracket \text{dwoje dzieci} \rrbracket = \lambda P. \exists x \in *(CHILD \cap IMMATURE): |x| = 2 \wedge P(x)$
- (b) $\llbracket \text{dwoje dzieci} \rrbracket = \lambda P. \exists x \in *(CHILD \cap IMMATURE): |x| = 2 \wedge P(\uparrow(x))$

(21a) represents the set of all the properties that the sum of two children has, which corresponds to the distributive reading of sentences in which the NP in question can occur. On the other hand, (21b) represents the set of all the properties that the group of two children has, which corresponds to the collective reading.

In the case of the noun phrase *dwoje dzieci* the semantic contribution of numeral morphemes is as follows:

- (22) (a) *dw-* → the cardinality of counted atoms equals 2
- (b) *-e* → counted atoms have to be the elements of the set that is the intersection of the set denoting all immature creatures and the set denoting children

The root determines that the cardinality of counted entities in the denotation of the noun has to be equal to 2, whereas the suffix *-e* defines counted atoms as belonging to the intersection of the set denoting all immature creatures and the set of all children. Since the set denoting children is a subset of the set denoting immature creatures, the result is not the empty set and the numeral successfully counts the atoms in the denotation of *dzieci* (“children”). If *dwoje* takes a different noun denoting immature creatures as its complement, everything works similarly except the fact that the numeral counts individuals in the denotation of a different noun, e.g., kittens or nestlings.

4.3 *Dwoje* Denoting Mixed Gender

The last context in which *-e* numerals can occur is the one that can be observed in (6c), where the numeral combines with a noun denoting mature creatures and the whole NP denotes a collection of male and female individuals. Similar to all Polish numerals, it is again the root that defines the cardinality of counted entities. In this case, however, the suffix *-e* determines that counted atoms have to be the elements of two different sets that are the intersections of the set denoting the type of counted

individuals, e.g., students, and sets denoting all male or female mature creatures. Furthermore, it requires the cardinality of these two intersections to be at least 1.

The semantic interpretation of (6c) is rather complex:

$$(23) \text{ (a) } \llbracket \text{dwoje studentów} \rrbracket = \lambda P. \exists xy : x \in {}^*(\text{STUDENT} \cap \text{MATURE} \cap \text{MALE}) \wedge \\ y \in {}^*(\text{STUDENT} \cap \text{MATURE} \cap \text{FEMALE}) \wedge \\ |x| > 0 \wedge |y| > 0 \wedge |x \sqcup y| = 2 \wedge P(x \sqcup y)$$

$$(23) \text{ (b) } \llbracket \text{dwoje studentów} \rrbracket = \lambda P. \exists xy : x \in {}^*(\text{STUDENT} \cap \text{MATURE} \cap \text{MALE}) \wedge \\ y \in {}^*(\text{STUDENT} \cap \text{MATURE} \cap \text{FEMALE}) \wedge \\ |x| > 0 \wedge |y| > 0 \wedge |x \sqcup y| = 2 \wedge P(\uparrow(x \sqcup y))$$

(23a) represents the set of all the properties that the sum of two students (one male and one female) has, whereas (23b) represents the set of all the properties of the group of two students (one male and one female). Similar to the precedent cases, (23a) corresponds to the distributive reading and (23b) to the collective reading. The contribution of particular morphemes is as follows:

(24) (a) *dw-* → the cardinality of counted atoms equals 2

(b) *-e* → counted atoms must be the elements of two different sets that are the intersections of the set denoting students and sets denoting all male or female mature creatures; moreover, the cardinality of both intersections has to be greater than 0

Since the semantics proposed above is rather complicated, let us consider possible denotations of (6c) with respect to the model where *a*, *b*, *c*, *d*, *e*, and *f* are atomic individuals and *a*, *b*, and *c* belong to the set of mature male creatures, *d*, *e*, and *f* to the set of mature female creatures, and *c*, *d*, and *e* to the set of students:

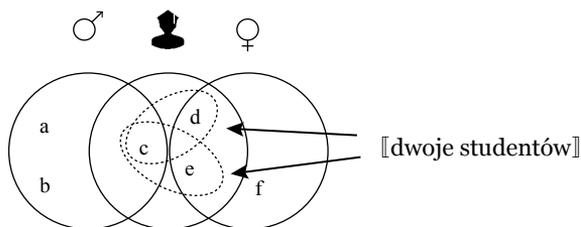


Figure 3. Possible denotations of *dwoje studentów*

According to the semantics proposed in (23), there are only two possible denotations of *dwoje studentów* with respect to this model. Since a) the set denoted by this phrase has to be constituted by the elements belonging to two intersections: a') the intersection of the set of all students and the set of all mature male creatures and a'') the intersection of the set of all students and the set of all mature female creatures and b) the cardinality of both intersections has to be greater than 0 and c) the cardinality of the denoted set has to equal 2, the only sets that satisfy all of these conditions are $\{c, d\}$ and $\{c, e\}$ as illustrated in Figure 3.

4.4 Semantically Anomalous Phrases

Let us now return to the puzzling question, “Why are phrases in which numerals with the suffix *-e* combine with NPs denoting collections of mature creatures of the same gender as in (9a)–(9b), repeated here as (25a)–(25b), awkward?”

- (25) (a) #dwoje mężczyzn
 two_{NON-CARD} men_{GEN}
- (b) #dwoje kobiet
 two_{NON-CARD} women_{GEN}

To understand this issue we should briefly recall two basic properties of the empty set (\emptyset). The first property we will need states that the intersection of any set with the empty set is always the empty set:

$$(26) \quad \forall A : A \cap \emptyset = \emptyset$$

The second property which is crucial for our purposes is called vacuous truth:

- (27) For any property: for every element of \emptyset the property holds.

Having this in mind, the awkwardness of (25a)–(25b) can now be explained. Since one of the intersections is necessarily the empty set, the condition that the cardinality of both intersections has to be at least 1 cannot be satisfied.

$$(28) \quad (a) \quad (\text{MAN} \cap \text{MATURE} \cap \text{FEMALE}) = \emptyset$$

$$(b) \quad (\text{WOMAN} \cap \text{MATURE} \cap \text{MALE}) = \emptyset$$

As a result we get an expression that denotes the empty set in every possible model, which leads to tautological truth conditions of any sentence containing such

a phrase with respect to any model since the predicate P in the formulae would be applied to the empty set, which would always result in the truth value True (vacuous truth). In this aspect phrases such as (25a)–(25b) are similar to expressions such as *#married bachelor*. However, the fact that some expression is tautological does not necessarily mean that such an expression is ungrammatical. In natural languages there are many tautological expressions that are grammatically correct and only some are considered ungrammatical (Gajewski 2002). Nevertheless, in this case it is crucial that no matter what kind of statement is expressed by a sentence, whenever a phrase such as (25a) or (25b) appears in it, the whole sentence gains tautological truth conditions, which blatantly flouts Grice’s Maxim of Quantity as reformulated by Landman (2011):

(29) Quantity: Avoid triviality.

A contingent statement is better than a trivial one.

It should be noticed that this explanation corresponds somewhat to the intuitions of native speakers, who most often do not judge phrases such as (25a)–(25b) as ungrammatical, but rather as nonsense and wonder what their meaning should be.

5. Conclusions

In this chapter I have shown how the semantics of Polish numerals with the suffix *-e*, e.g., *dwoje* (“two”), affects their distribution. Three contexts in which *-e* numerals can occur have been examined: i) NPs denoting complete semi-lattices, i.e. pluralia tantum, ii) NPs denoting collections of immature creatures, and iii) NPs denoting collections of both male and female mature creatures, and the semantic interpretation of each type of NPs was proposed. I have argued that Polish *-e* numerals are compositional and presented the semantic contribution of particular morphemes in their make-up. According to my proposal, it is always the root of the numeral that determines the cardinality of counted objects while the suffix *-e* defines what type of entities are counted. The proposed semantics correctly explains why phrases in which a numeral with the suffix *-e* combines with a noun denoting creatures of the same gender are semantically anomalous.

Slavic languages have rich derivational morphology and many different classes of numerals. The treatment of Polish *-e* numerals proposed in this chapter could possibly be extended to similar classes of numerals in other Slavic languages such as Serbian or Croatian *dvoje* (“two”). The compositional approach has great potential in the semantic analysis of different classes of morphologically complex numerals in Slavic.

Chapter Five

Elena Rudnitskaya

Syntactic Properties of the Korean Floating Quantifier-Type Classifier Construction: Formal Syntactic or Information Structure Account?

1. Background Information on Post-nominal Classifier Construction

1.1 Classifier Construction in an Argument Position

The post-nominal classifier construction with a numeral in Korean has attracted the attention of scholars because of its non-standard morphological and syntactic properties. First, the Numeral + Classifier [NUM + CLF] constituent that follows the lexical noun (NP_{LEX}) modifies NP_{LEX} with respect to quantity. It can be called a post-nominal modifier, whereas otherwise Korean has only pre-nominal modifiers. Second, unlike Japanese (which has a similar construction), classifiers in Korean preserve certain grammatical nominal properties: in particular, they can attach case affixes, or particles.¹ As it is shown in (1a–c), the case-marker can attach to NP_{LEX} or to CLF, or to both. Such variability in case-marking creates a problem for a formal syntactic analysis.

¹ In this study, it is assumed that the absence of a case-marker on NP_{LEX} or on CLF means that the phrase has a null/abstract case-marker. The issue of the formal analysis of case markers in Korean is beyond the scope of this chapter. Korean case markers have some important features of clitics and cannot be considered bound affixes (see, e.g., Martin 1992; Chang 1996; Sohn 1999). The nominal base and the case-marker do not form one word but rather a Clitic Phrase with the Clitic head and the NP complement. I am aware of this problem for the analysis that treats the nominal base and the case-marker as one word.

- (1) (a) [**chayk** (NP_{LEX}) [**sey** (NUM) **kwen-ul** (CLF)]] [argument position]
 book three-ADN CLF-ACC
- (b) **chayk-ul** **sey** **kwen** [argument position or FQ]
 book-ACC three-ADN CLF
- (c) **chayk-ul** **sey** **kwen-ul** [FQ preferred]
 book-ACC three-ADN CLF-ACC
 “Three books [ACC]”

The following questions arise with respect to this paradigm. (1) Are the constructions in (1a–c) one constituent / noun phrase or two constituents? Can (1a–c) be analyzed in the same way? (2) Which rules regulate case-marking in (1a–c), and do the factors of Differential Object / Subject Marking (DOM/DSM) (see Aissen 2003; Kwon and Zribi-Hertz 2008), that is, referential / Information Structure status factors and others, influence case-marking patterns? (3) How can the formal analysis be construed to account for the case-marking variation in (1a–c)?

First of all, the patterns in (1a–c) do not always occur in one syntactic environment. The (1a) pattern most often occurs when NP_{LEX} immediately precedes the [NUM + CLF] phrase, and the whole constituent is in an argument (Subj[ect] / Obj[ect]) position, as in (2a–c). In (2a), the (1a) or (1b) pattern is used in the unmarked case – when NP_{LEX} is so-called “bare noun” and is often, but not always, interpreted as non-specific.²

J.-B. Kim (2011, 32) shows that the (1a) pattern can have variable denotation; NP_{LEX} can be specific or even definite – e.g., when the whole group [NP_{LEX} + [NUM + CLF]] is topicalized or follows the *i* “this/these” pronominal. Such referential variability is impossible for the (1b) pattern. Example (2b), in which NP_{LEX} represents a topical Obj, shows that the (1b) pattern is associated with the so-called “partitive reading” (“NUM of NP_{LEX}”). (2c) shows that the (1a) pattern is strongly preferred over the (1c) pattern in the context of an embedded clause.

- (2) (a) Han san sok mau-eyse **holangi** **twu**
 one mountain inside village.LOC tiger two
mali-ka/ holangi-ka twu mali sal-ass-e (J.-B. Kim 2011, 32)
 CLF-NOM/ tiger-NOM two CLF live-PST-DECL
 “In a deep mountain, two tigers lived.”

² In the sense, for instance, of J.-Y. Kim (2004), bare NP has no DP projection. So its referential status is determined by the context, for instance, by a lexical item such as a demonstrative.

- (b) **Kongchayk-ul twu kwen** ilk-ess-ta (J.-B. Kim 2011, 34)
 notebook-ACC two CLF read-PST-DECL
 “(I) read two notebooks / two of the notebooks.” [partitive reading possible]
- (c) Sensayng-nim-un [**haksayng-tul(??-i)twu myeng-i** ponay-n]
 teacher-HON-TOP student-PL-NOM two CLF-NOM send-PTCL
 phyenci-lul ilk-ess-ta (J.-B. Kim 2011, 35)
 letter-ACC read-PST-DECL
 “The teacher read the letter that two students sent him.”

As it is shown in (2a–c), the case-marking of NP_{LEX} and CLF in a Subj/Obj position does depend on DOM/DSM factors mentioned above: referential properties of NP_{LEX} and Information Structure properties of the sentence containing NP_{LEX} are related to the grammaticality of using the (1a–c) patterns. In particular, (1a) is used when NP_{LEX} is non-specific (in [2a]) or when it is back-ground / not topical (in [2c]); (1b) is used when the whole group with the CLF has a partitive reading (in [2b]).

1.2 Cases of the Classifier Construction as a Discontinuous Constituent

Let us now consider cases in which NP_{LEX} and [NUM + CLF] are not one constituent: NP_{LEX} is topicalized to the sentence-initial (A') position. In (3)–(4), patterns (1b–c) are used, but (1b) is banned in certain cases, such as (3b). In (3)–(4), the [NP_{LEX} + [NUM + CLF]], according to Jung (2004), is a “discontinuous constituent.”

- (3) (a) **Haksayng-i₁ ecey wain-ul** [_{t₁} **sey myeng-i**]
 student-NOM yesterday wine-ACC sey CLF-NOM
 masi-ess-ta (S.-Y. Kim 2004, 59–60)
 drink-PST-DECL [subject CLF, pattern (1c)]
- (b) ***Haksayng-i₁ ecey wain-ul** [_{t₁} **sey myeng**] masi-ess-ta
 “Three students had wine yesterday” [subject CLF, pattern (1b), over the fronted object]
- (c) **Haksayng-tul-i₁ maykcwu-lul** [_{t₁} **sey myeng**]
 students-PL-NOM beer-ACC three CLF
 √-ina/√-man]³ masi-ess-ta (J.-B. Kim 2011, 18)
 -FOC.even/-FOC.only drink-PST-DECL
 “EVEN/ONLY three of the students drank beer.” [subject focused CLF, pattern (1c)]

3 The root symbol √ stands for acceptability.

- (4) (a) **Maykcwu-lul**₁ Con-i [t₁ **sey pyeng-ul**] masi-ess-ta
 beer-ACC John-NOM three CLF-ACC drink-PST-DECL
 (Ko 2005, 32)

“John drank three bottles of beer.” [object CLF, pattern (1c)]

- (b) **Chayk-ul**₁ Chelswu-ka [t₁ **sey kwen**] ilk-ess-ta
 book-ACC Chelswu-NOM three CLF read-PST-DECL
 (Lee 1989, 9)

“Of a set of volumes, Chelswu has read three.” [object CLF, pattern (1b),
 partitive reading]

Examples (3)–(4) show (i) the subject-object asymmetry with respect to the (1b) pattern: this pattern is allowed in (4b) and disallowed in (3b), and (ii) the tentatively background status of the CLF without case-marker in (3b) compared to (3a) and to (3c) (in which CLF has a focus particle). These intermediate conclusions are discussed in more detail in Section 2.

The data on the NP_{LEX} Subject-to-Object raising-like⁴ construction and on adverbative passivization (with [NUM + CLF] stranded) show that the Information Structure status and referential properties of both NP_{LEX} and CLF influence the variation between the (1b) and (1c) patterns.

- (5) (a) *Ku kulwup-eyse Kim kyoswu-nun **haksayng-ul**
 this class-LOC.STAT Kim professor-TOP student-ACC
 sey **myeng-i** yunungha-ta-ko sayngkaha-n-ta
 three CLF-NOM smart-DECL-QUOT believe-PRS-DECL

- (b) ?Ku kulwup-eyse Kim kyoswu-nun **haksayng-ul**
 this class-LOC.STAT Kim professor-TOP student-ACC
 sey **myeng** yunungha-ta-ko sayngkaha-n-ta
 three CLF smart-DECL-QUOT believe-PRS-DECL

“In his class, professor Kim believes three students to be smart.”

- (6) (a) Malpel-i **haksayng(-ul)** sey **myeng-ul** sso-ass-ta
 wasp-NOM student(-ACC) three CLF-ACC sting-PST-DECL

“The wasp stung three students.” (active)

4 I use the term “Subject-to-Object raising-like construction” because this construction in Korean has many properties that distinguish it from the “sample” raising construction *I consider John to be smart* (Yoon 2007).

- (b) **Haksayng-i** sey \checkmark **myeng-Ø**/ \checkmark **myeng-i**/ \checkmark **myeng-ul** sso-i-ess-ta
 student-NOM three CLF-Ø/-NOM/-ACC sting-PASS-PST-DECL
 “Three students were stung.” (adversative passive)

In both (5) and (6), it is shown that Subject-to-Object raising or adversative passivization (of NP_{LEX} alone) is grammatical only when CLF has no (overt) case-marker. According to Yoon (2004, 2007), the raised Subject in the Korean Subject-to-Object raising-like construction is highly topical;⁵ so the stranded [NUM + CLF] group (as in [5a–b]) is background. In (6b), the Subj (of the adversative passive) but not the stranded [NUM + CLF] is focus of empathy (Kuno 1972). Therefore, no overt case-marking on CLF is preferred in (5b), (6b) (pattern [1b] is preferred over [1c]).

One more factor that influences CLF’s case-marking is its grammaticalization. CLF-S are grammaticalized nouns – they have nominal grammatical features but have no lexical meaning, and they have a limited distribution (only in specific constructions with numerals). Grammaticalized nouns in Korean are more often found with case-drop than full/lexical nouns.

Besides the modifying function that CLF-S share with NUM (see above), CLF-S also have Individuation function (Lee 1989; Tang 1990; Krifka 1995; Cheng and Sybesma 1999). Individuation is also modification, so CLF-S have a predicative function, similar to predicative nouns in nominal predicates. As it is shown below (example [10] in section 2.2; see also Ahn and Cho 2007), predicative nouns are often used without case-marker. In a similar way, drop of a case-marker on a CLF is rather frequent. So, both the grammaticalized status and the predicative function of CLF favor case-drop. Compare (5a–b) and (6b) to Subject-to-Object raising and adversative passive in (7b) and (8b) derived from Subj/Obj Possessor raising constructions with case-doubling in (7a)–(8a).

- (7) (a) Na-nun [**Waikhikhi-ka kyengchi-ka** coh-ta-ko] sayngkakha-n-ta
 I-TOP [Waikiki-NOM landscape-NOM good-DECL-QUOT] believe-PRS-DECL
 “I believe that Waikiki has a good landscape.”
- (b) Na-nun **Waikhikhi-lul kyengchi-ka** coh-ta-ko sayngkakha-n-ta
 I-TOP Waikiki-ACC landscape-NOM good-DECL-QUOT believe-PRS-DECL
 “I believe of Waikiki that (it) has a good landscape.”

5 The experimental data on the Subject-to-Object raising-like construction in some Turkic and Mongolian languages (Serdobol’skaya 2012) show that the raised Subject is highly topical, similar to Korean.

- (8) (a) **Nay-ka ai-lul son-ul cap-ass-ta** (Maling and Kim 1992, 49)
 I-NOM child-ACC hand-ACC catch-PST-DECL
 “I caught the child by the hand.” (active)
- (b) **Ai-ka son-i/son-ul cap-hi-ess-ta** (Maling and Kim 1992, 49)
 child-NOM hand-NOM/ACC catch-PASS-PST-DECL
 “The child was caught by the hand.” (passive)

The stranded Possessee in (7b) and (8b) in the Subject-to-Object raising construction and in the adversative passivization construction (*kyengchi-ka* and *son-ul*) preserve their case marker (pattern [1c]) without any degree of grammaticality decrease, unlike CLF in [5a] and [6b]). Possessee is syntactically “demoted” in the Possessor raising construction, but it is a full noun, unlike CLF.

To conclude, the comparison to Possessor raising constructions⁶ shows that context prominence of the raised NP_{LEX}/ Possessor, and degree of grammaticalization of CLF vs. Possessee (pragmatic and Lexicon features factors) affect the use of patterns (1b) and (1c). In section 2.1, it was shown that the referential status of the NP_{LEX} also influences case-marking patterns. In the next section, I’ll analyze the existing formal accounts of the facts in (3)–(8) and give my suggestions as to how to incorporate these non-syntactic factors into these accounts.

6 This comparison also shows that Ko’s (2007, 73) claim about the similarity of post-nominal CLF constructions and Possessor raising constructions shown in (i a–b) is not well-based. (i a–b) do not constitute sufficient evidence comparing to (5)–(6) vs. (7)–(8) above. Also, (i c) shows that it is not NP’s [*John-i*] fronting that causes the ungrammaticality of (i a) but the dynamic property of the verb *cha-ta* “kick” in (i a) and (i c), see Yoon (2003) for details of licensing Subject Possessor raising constructions.

- (i) (a) ***John-i kong-ul apeci-ka cha-ss-ta** (Ko 2007, 73); [cf. (3b)]
 John- NOM ball-ACC father-NOM kick-PAST-DECL
 “John’s father kicked a ball.”
- (b) **John-ul Mary-ka tali-lul cha-ss-ta** (Ko 2007, 73); [cf. (4b)]
 John- ACC Mary- NOM leg- ACC kick- PAST-DECL
 “Mary kicked John’s leg.”
- (c) ***John-i apeci-ka kong-ul cha-ss-ta**
 John- NOM father- NOM ball- ACC kick- PAST-DECL
 “John’s father kicked a ball.” [cf. (i a)]

2. Formal Analysis of the Post-nominal Classifier Construction: The Small Clause Analysis and the Cyclic Spell-Out Analysis Combined

The two main post-nominal classifier phrases formal analyses are the rather traditional Small Clause (SC) analysis (see e.g., Lee 2000; Cho 2003; S.-Y. Kim 2004) and the cyclic Spell-out analysis (Ko 2005, 2007). I will show how these two analyses can be combined and expanded to account for most of the data on postnominal CLF constructions. The Small Clause analysis is illustrated in (9):

(9) NP_{LEX} ... t_{NP_{LEX}} [_{SC} PRO [_{FQ} NUM + CLF]] [NP_{LEX} topicalization, SC structure]

In (9), PRO and [NUM + CLF] form a Small Clause (SC); NP_{LEX} controls its subject PRO, and CLF agrees in Case with PRO as it is inside a secondary predicate FQ (= Floating Quantifier).⁷ PRO is the Logical Subject of SC, and FQ is the Logical Predicate (see Kuroda 1972). This analysis assumes that NP_{LEX} and [NUM + CLF] are not necessarily one constituent. However, obligatory control – the relation between NP_{LEX} and PRO – is local.⁸ As Biskup (2006) shows, the NP and the SC controlled by it must be adjacent.

The analysis in (9) is compatible with the facts on case-marking of CLF discussed in section 1.2: as CLF in (9) is inside a secondary predicate, it is not a referential noun but a predicate noun, so its case-marker is dropped more frequently than the case-marker of the Possessee. The CLF, unlike the Possessee, cannot have overt case-marking in background contexts – cf. (5b)–(6b) and (7b)–(8b).

7 The idea of case-agreement via secondary predicate analysis cannot be applied to Korean non-agreeing secondary predicates. It is consistent, as Ko (2005) mentions, for instance, with Russian secondary predicate data:

(i) (a) **Ivan** pošel [_{SC} PRO **odin**] [Russian, subject-control]
 John[NOM] went PRO[NOM] alone[NOM]
 “John went (there) alone.”

(b) Ivan ugovoril **Petra** [_{SC} PRO pojti **odnogo**] [object-control]
 John persuaded Peter[ACC] PRO[ACC] go.INF alone[ACC]
 “John persuaded Peter to go (there) alone.”

8 Here, obligatory control is an appropriate relation because PRO in this construction cannot be overt.

(i) haksayng_{NP_{LEX}} [_{SC} PRO/ *caki/ *ku(-tul) [_{FQ} sey myeng]]
 student self/ he(-PL) three CLF
 “Three students”

On one hand, this is an appropriate functional explanation of (3a) vs. (3b): it is shown in (3c) that a focus particle can also be added to CLF instead of the NOM marker: these data support the “focalizing function of NOM analysis” of (3b) (as it is pointed out by J.-B. Kim 2011¹²). On the other hand, this analysis is not directly related to a formal analysis such as in (9), primarily because, according to (9), [NUM + CLF] can be NP_{LEX}’s Logical Predicate without immediately following NP_{LEX} – see (3)–(6).

Ko’s (2005, 2007) account is more appropriate for a formal implementation of the data in (3)–(4) by modifying (9). Examples (3)–(4) are closely studied by Ko (2005, 2007). In order to distinguish Subj_{CLF} expressions from Obj_{CLF} expressions, Ko (2007) uses Fox and Pesetsky’s (2005) cyclic linearization rule. Cyclic linearization assumes that the surface linear order is restricted by subsequent Spell-out operations applied to certain domains in the syntactic tree that are the same as successive cyclic movement domains: to VP, CP and DP. After applying Spell-out to, say, VP, the relative order of all the nodes inside VP cannot be changed on further stages of the derivation. Ko (2005, 2007) assumes that vP rather than VP is the minimal Spell-out domain in Korean, and NP_{LEX} and its modifiers (such as [NUM + CLF]) are base-generated as one constituent in Spec vP. Subj’s ([NP_{LEX} + [NUM + CLF]]’s) position is fixed before Obj’s position (Subj > Obj), and this relative order of Subj and Obj cannot be changed any more.

In (3b), Obj (*wain-ul*) fronted on a par with NP_{LEX} intervenes between NP_{LEX} and [NUM + CLF]. The NP_{LEX} > Obj > [NUM + CLF] order which is shown in (3b) can only be achieved if, before the vP-internal Spell-out, Obj (*wain-ul*) moves to Spec vP and intervenes into the [NP_{LEX} + [NUM + CLF]] constituent. However, according to Ko’s (2005) Edge Generalization, elements of a constituent on the left periphery (in the outer Spec) of any domain cannot be separated by another constituent from inside this domain – so Obj cannot move and intervene between NP_{LEX} and [NUM + CLF] via vP-internal movement. Thus, the [NP_{LEX} + [NUM + CLF]] > Obj order is the only one available. The NP_{LEX} > Obj > [NUM + CLF] order in (3b) is ruled out assuming that NP_{LEX} and [NUM + CLF] are one constituent in Spec vP.

This hypothesis is theoretically well-based; it explains the contrast between (3b) with the Subj classifier construction and (4b) with the Obj classifier construction (which is grammatical), and this contrast is an instance of the Subj – Obj asymmetry. In order to explain why (3a) (in which CLF has an overt case-marker) is grammatical, Ko (2005) proposes that an NP_{LEX} and the group [NUM + CLF] are in some cases not base-generated as one constituent. Then, there must be a syntactic position between NP_{LEX} and [NUM + CLF] on the left periphery of vP, so that Obj can move and stay in this position before the

12 Cf. the theory by Schütze (2001) that says that NOM and ACC(usative) in Korean have two separate meanings, or functions – case assigning and focalizing.

vP Spell-out: then the $NP_{LEX} > Obj > [NUM + CLF]$ order would be grammatical on any further stage of derivation, including the NP_{LEX} and Obj topicalization in (3a).

Ko's (2005) account of (3a) vs. (3b) is accurate and explanatory. The stipulation of two different base-structures for the patterns (1b) and (1c), however, is counter-intuitive, and Ko's account anyway does not cover very well the case-drop facts presented in section 1.2. The two base-structures stipulation works only for the A'-movement data in (3)–(4) but not for the A-movement data in (5)–(6) vs. (7)–(8), in which there is no Subj vs. Obj asymmetry. I do not present all of Ko's explanation for (5)–(8) here. It is generally coherent but has some points that are not entirely clear.

Thus, Ko's (2005) account is needed to explain the Subj – Obj asymmetry in (3)–(4), but not the facts in (5)–(6) that demonstrate no Subj – Obj asymmetry. Moreover, Obj topicalization in (4a–b) optionally allows case-marking on CLF (CLF in both (4a–b) is probably background), so the Information Structure factors relevant for A-movement are not always relevant for A'-movement.

If an NP_{LEX} that originates from a Subj classifier construction is topicalized in (11), and the Obj is not topicalized, CLF, unlike the case in (3b), need not have a case-marker (pattern [1b]). That means that the Subj – Obj asymmetry in fact exists for topicalization: if Obj is topicalized, Subj topicalization case patterns become more restricted.¹³

- (11) **Haksayng-tul-i**₁ [na-nun [t₁ **sey-myeng** Mary-lul manna-ss-ta-ko]
 student-PL-NOM I-TOP three-CLF Mary-ACC meet-PST-DECL-CONJ
 sayngkakha-n-ta]. (Ko 2007, 52)
 think-PRS-DECL
 “Students, I think that three [of them] met Mary.” [long-distance topicalization]

Examples (12a–b) support the conclusion above: NP_{LEX} Subj topicalization is restricted in certain environments, e.g., in an intransitive unergative sentence, as in (12a). (12a) has no Direct Obj, and pattern (1b) in Subj NP_{LEX} 's topicalization is degraded; it improves, however, under insertion of additional adverbials (12b):

- (12) (a) ***Haksayng-tul-i** caki-uy ton-ulo **twu myeng**
 student-PL-NOM self-GENmoney-INSTR two CLF
 cenhwahay-ss-ta (J.-B. Kim 2011, 41)
 phone-PST-DECL
 “Two students made a phone call with their own money.”

13 As Ko and Oh (2012) show, topicalization of an NP_{LEX} out of a Subj classifier construction is in general more restricted than out of an Obj classifier construction, disregarding case-marking of CLF, and native speakers often judge not only (3b) but also (3a) and (11) as not entirely grammatical (??/?).

Let us survey the questions from section 1.1.

1. Are the constructions in (1a–c) one constituent / noun phrase or two constituents? Can (1a–c) be analyzed in the same way?

According to Rudnitskaya (2013), the pattern (1a) (in an argument position, illustrated in [2a–c]) must be analyzed as one complex nominal constituent. According to the data and analysis presented above, (1c) must be analyzed as in (9), and (1b) can be analyzed either similar to (1a) or similar to (1c) depending on whether this pattern occurs in an argument position (as in [2a–b]), or NP_{LEX} undergoes leftward movement (as in [3]–[6], [11]–[12]).

2. Which rules regulate case-marking in the post-nominal classifier construction, and do the factors of Differential Object/Subject Marking (DOM/DSM) (Aissen 2003; Kwon and Zribi-Hertz 2008) or referential/Information Structure status factors, etc. – influence these rules?

The DOM / DSM factors do regulate case-marking patterns (1a–c), including NP_{LEX}'s A-movement constructions. These factors must be formalized and included into the analysis in (9) along the lines of the above proposals.

3. How can the formal analysis be construed to account for the case-marking variation in (1a–c)?

It has been shown that the traditional SC analysis in (9) and Ko's (2005) analysis based on cyclic Spell-out rules are essentially enough with certain modifications: e.g., insertion of an abstract null P_{RED} head into which CLF can be abstractly incorporated, or Information Structure features that affect overt or covert case Spell-out. These two accounts are compatible with the data, as well as sufficiently formalized and not too complicated.

Here are some additional questions. For instance, why, in formal terms, is (12b) less degraded than (12a)? Ko (2007) proposes an explanation based on the asymmetry between vP-internal and vP-external constituents. Intervention between NP_{LEX} and [NUM+CLF] of vP-external adverbials such as *cikcep* "without help" and *Seoul-ey* "to Seoul" improves unergative Subj NP_{LEX} topicalization, whereas intervention of vP-internal adverbials such as *caki ton-ulo* "with their own money" makes such sentences worse (similar to the Obj insertion in [3b]). This explanation is consistent with the (3a–b) paradigm; it is well-based and formal enough. Other questions are: why does only A-movement but not A'-movement of NP_{LEX} require abstract incorporation of CLF into P_{RED}, or why does only A'-movement demonstrate the Subj vs. Obj asymmetry? These questions cannot be answered in this chapter.

3. Conclusions

I have shown that if both the Small Clause account and the cyclic Spell-out / Ko's (2005) account are combined, the formal description of most of the internal and external syntax of postnominal CLF constructions can be achieved. These two analyses together explain A-movement of NP_{LEX} (the SC account), and A'-movement of NP_{LEX} (Ko's account).¹⁶ The SC account must be modified so that CLF be followed by an abstract predicate P_{PRED} to mark CLF's predicate status: when CLF is abstractly incorporated into P_{PRED}, CLF cannot have a case-marker. Ko's stipulation denying one-constituent status of the classifier construction in the (1c) pattern with a cased CLF seems superfluous and can be substituted by additional Information Structure marking that is, the [+FOC] of CLF in sentences with a certain Argument and Information Structure.

The data presented above and their analysis has serious implications for the Case Theory. It follows from the present chapter that case-marking in Korean depends on Information Structure, referential status of the nominal, and on specific features of the nominal in the Lexicon such as [FULL/LEXICAL] vs. [GRAMMATICALIZED] (noun). In Korean, the mechanism of Structural Case-checking cannot be maintained as in European languages. For instance, Chang (1996, 61) regards NOM and ACC markers as heads of Delim(ite)r Phrases that are adjuncts to NP (and are optional). Choi (2005) proposes a way to incorporate the referential factors affecting presence/absence of the case-marking into the Chomsky (2001) version of the Minimalist framework.

16 Ko (2005) notes that her account is compatible with the SC account but does not go into details.

Chapter Six

Magdalena Zíková and Pavel Machač

Variability in Phonetic Realization of the Demonstrative *Ten* in Terms of Its Informational Relevance in the Sentence

1. Introduction

There has been a long debate in Czech linguistics as to whether the Czech demonstrative pronoun *ten* (meaning “that” or “the”) is in the process of grammaticalization into a definite article.¹ The dispute dates back to the 1920s, when the resemblance of the demonstrative *ten* to the English definite article *the* was first suggested (Mathesius 1926). Indeed, in contemporary spoken colloquial Czech one might easily perceive patterns of usage which obviously deviate from the usage of a typical demonstrative pronoun (Diessel 1999).

Specifically, the Czech demonstrative *ten*:

- does not involve deictic reference and thus gives no information on the distance of the object from the speaker (contrary to a demonstrative, which is always deictic);
- may refer to entities not present at the moment of speaking or not mentioned before in the discourse (contrary to a demonstrative, which inherently does so);
- commonly refers to objects which do not (even implicitly) contrast with other objects (contrary to a demonstrative, which helps to identify an object by distinguishing it from other objects in the same class). A very clear example of this is the common use of the demonstrative *ten* with ordinal numerals (1a) and superlatives (1b):

¹ This study is outcome of the project of Internal Grants at the Faculty of Arts, Charles University in Prague, 2013.

- (1) (a) Ta třetí sekyra je nejtěžší.
 That/the third axe is the heaviest
 “The third axe is the heaviest one.”
- (b) To je ta nejkrásnější květina.
 This is that/the most beautiful flower
 “This is the most beautiful flower.”

Interestingly, these are exactly the features which are common properties of definite articles. In addition, considering that definite articles usually evolve from demonstratives, it seems reasonable to argue that the Czech demonstrative *ten* is on its way to becoming a definite article – indeed, on a way which stretches over hundreds of years.

1.1 Phonetic Reduction as a Sign of Grammaticalization

The behavior of the demonstrative *ten* has been studied from various perspectives so far but to our knowledge only little has been done as far as the acoustic properties of the word are concerned.

On the phonetic level, grammaticalization of an expression is usually accompanied by phonetic reduction, which comprises both a decrease in prosodic salience (specifically, the loss of stress in the case of the demonstrative-to-article change) and segmental weakening (or segmental loss).

Given that apparent phonetic reduction only appears in the last stage of grammaticalization, we cannot expect to observe any massive changes in the phonetic substance in this case. The demonstrative *ten* is quite obviously still used in its phonologically full form in formal speech. However, we may notice that it is frequently reduced in casual speech. The principal question then is whether this minor phonetic reduction is somehow systematically related to the linguistic function of the demonstrative. If we observe a correlation between phonetic reduction and grammaticalization in a synchronic dimension we may take the amount of both prosodic and segmental weakening as an indication of the roles which the demonstratives play in communication. Eventually, this might indicate the most grammaticalization-prone contexts.

1.2 Hypothesis

In the present study we focus on the phonetic realization of the demonstrative *ten* in terms of its informational relevance in the utterance. In his analysis of the development of the definite article in French (which is based on the description of Vincent 1997) Lyons (1999, 334) argues that definite articles tend to be established in the subject position first. Subjects are universally tied to topics (or themes) which

refer to a piece of already known information. One might then speculate that the demonstrative forms which belong to the topical (thematic) part of the utterance (and hence convey a lesser informational load) would usually be more reduced than the demonstrative forms in the rhematic part of the utterance.

Indeed, some results of the previous studies carried out in this field of investigation suggest that we might be on the right track. Ziková and Skarnitzl (2010) analyzed the melodic and dynamic behavior of the demonstrative *ten* in semi-spontaneous speech and found that in both respects the contrast between the demonstrative and the following word was greater in the rhematic part of the utterance than in the thematic part. On the other hand, another parameter of syllabic prominence, vowel quality (measured by the spectral slope of the vowel in the demonstrative), did not reveal any systematic pattern in the prosodic behavior of the demonstrative in terms of its informational relevance. However, what it did reveal was greater prominence of nominal demonstratives over adnominal demonstratives (Volín and Ziková 2013).²

The aim of the present study is to complete the picture created by the previous studies by involving information on the segmental reduction which the demonstrative *ten* commonly undergoes. We hypothesize that the forms of the demonstrative *ten* in the thematic part of the utterance tend to be phonetically weaker (i.e., more reduced) than those in the rhematic part of the utterance because of the lower informational load which they carry. At the same time, we claim that the adnominal demonstratives are generally more reduced than the nominal ones because of their less autonomous position in the nominal phrase and less distinctive function in the utterance.

2. Material

In order to ensure the comparability of the results across all the studies, the same material was used and a comparable set of parameters was applied. We used a corpus of semi-spontaneous speech consisting of about 150 minutes of dialogues and comprising almost 20,000 words. There are five pairs of speakers (five males, five females; four single-sex pairs, one mixed-sex pair). An obvious advantage of this corpus is the high frequency of demonstratives, which is due to the specific design of the conversational setting (a picture replication task; for more detailed information see Ziková and Skarnitzl 2010).

In total, 1,246 instances of the demonstrative *ten* were identified in the corpus, out of which 154 items have been excluded because of speech inconsistencies or signal incomprehensibility. Out of the 1,092 items that were analyzed 988 were

2 Nominal demonstratives are those which substitute for substantives (as in *I like that*), whereas adnominal demonstratives accompany them (as in *I like that guy*). In other words, the nominal demonstrative is the head of NP, the adnominal one is the dependent.

adnominal and 104 nominal demonstratives.³ Overall, the total number of items analyzed far exceeded the size of the sample in the previous studies.

2.1 Parameters

In order to get as comprehensive a picture as possible, each demonstrative form was coded for a set of both linguistic and phonetic parameters.

As for the linguistic parameters, a distinction was made between nominal and adnominal demonstratives and, in both of these categories, the informational role of the demonstrative was assessed. In this respect, every demonstrative form was evaluated as to whether it belongs to the thematic or to the rhematic part of the utterance.

As for the phonetic parameters, the position of the demonstrative in the tone group (first vs. medial vs. final foot in the tone group) and the type of the preceding segment were taken into account.

Because there is no broad consensus on the meaning of the terms theme and rheme, we feel obliged to give a brief description of how we understand the concepts. Facing the vast number of different theories on the theme–rheme opposition and, consequently, great terminological ambiguity, we deliberately kept matters as simple as possible following several basic principles: first, we focused on sentence-level relations, leaving aside the supra-sentential relations (topic/theme development). Second, as the complex sentence turned out to be too broad a domain of analysis in spontaneous speech, a clause-by-clause strategy was followed throughout the annotation, i.e., the theme and rheme categories were tracked in the domain of a single clause. And finally, for the ease of interpretation we decided to use a binary categorization that assigned each demonstrative either to the thematic part or to the rhematic part of the utterance.

Traditionally, theme is understood as carrying contextually embedded information, whereas rheme is viewed as a piece of information not recoverable from the context. In Czech, the informational load of linguistic units corresponds in principle to the word order in a sentence: the informational relevance of a unit gradually increases as we proceed from the beginning to the end of a sentence. In our study, we broadly adhered to these criteria (i.e., the relation of a linguistic unit to the context and its position in the clause) in the interpretation of theme and rheme. Nevertheless, the special nature of our material called for specific solutions in some cases.

First, it follows from the very research question that rhematic information does not have to be discursively new. If we accepted such a restriction, we would

³ The relatively low number of nominal demonstratives is due to the fact that only those instances of nominal demonstratives which had a detectable nominal referent have been accepted.

obviously run into a dead end for all demonstratives inherently refer to an already-mentioned referent.

Second, there are some characteristics of spontaneous speech which make the classification difficult, in particular, the high proportion of non-clausal utterances and strong inclination towards the rhematization of given information. These features are naturally given by the high amount of shared knowledge, both situational and background private knowledge, so that much information is communicated elliptically and only the most relevant facts are explicitly mentioned. As the form of an utterance is often non-clausal, it is difficult to classify it by means of an intra-clausal device (such as the categories of theme and rheme, in our view, are). For these reasons, referents introduced into the discourse as the main objects of attention by means of non-clausal utterances were generally interpreted as rhemes even though they had already been mentioned before in some cases (e.g., *Ted' ta stěna, ve které je koryto, jo?* [“And now the wall on which the manger is, OK?”]).

2.2 Segmental Reduction

Consequently, all the items were subjected to a detailed perceptual analysis in terms of segmental reduction. As most analyses in the research on reduction rely on acoustic or articulatory measurements, let us first briefly present the background and basic concepts of our approach.

By segmental reduction we mean all types of segment weakening, from mild reduction such as the centralization or monophthongization of vowels to the complete elision of a segment. Viewing a segment as a weakened complex of phonetic features specifically means the weakening or the loss of one or more of its phonetic features and elision the loss of *all* of its phonetic features. This distinction is useful to point out because of the third type of segment weakening, i.e., parallel articulation. This type of reduction might be described as an intermediate step between weakening and deletion. Here the sound is almost lost except for one feature which is then transferred onto a neighboring segment. Metaphorically speaking, the sound survives as its neighbor's guest. Instances of parallel articulation are rather frequent in spontaneous speech. A common instance of this is the nasalization of a vowel under the influence of a neighboring nasal. In casual speech we often encounter a vowel-nasal or nasal-vowel sequence in which the nasal seems perfectly perceptible to us even though there would be almost no trace of it if we searched for it in the spectrogram: e.g., [nɛ̃] *než* (“sooner before”) > [ɛ̃j]. The reason why we “hear” the nasal although it is not present in the signal as an independent segment is that the feature of nasality has been kept and realized on the neighboring vowel. In perception the nasalized vowel stands for both the oral vowel and the dropped-out nasal.

After a detailed perceptual inspection of all the items in the corpora a set of reduction types occurring in the demonstrative forms was compiled. The method

of careful listening was used in the perceptual analysis: in a wider context (text, sequence of words, word) and in a narrower context (the target sound in a zero context and in connection with neighboring sounds). We assessed the obvious perceptual differences from the canonical pronunciation. Acoustic visualization was used in parallel. Naturally, the reduction types obtained differ in their status, some of them being more serious (e.g., elision) than others (e.g., the centralization of vowels). Therefore a system of penalization has been devised which scored the reduction types according to their perceptual relevance: minor affections by fewer points, more serious affections by more points. As we were not aware of any solid theory of perceptually based reduction we mainly drew upon our previous knowledge of the principles of reduction.

The system of penalization is based on the realization of phonetic features characterizing the sound in its full pronunciation (inherent phonetic features). The penalization values were set as follows:

- 0.5 point: inherent phonetic feature is partly modified; the sound is still identifiable in the narrower context (e.g., open/closed vowel, advanced/retracted vowel or consonant);
- 1 point: inherent phonetic feature is not realized or it is substituted by a feature of a neighboring sound; the sound cannot be reliably identified in the narrower context (e.g., full centralization, devoicing, delabialization, fricativization, shortening of a vowel; nasalization, denasalization, voicing, devoicing of a consonant);
- 3 points: parallel articulation (i.e., simultaneous articulation of the phonetic features of two sounds, the phonetic feature of one sound being carried by another one); the sounds are not identifiable without a broader context (e.g., [n] + [ɛ] > [ɔ̃]);
- 3.5 points: elision (all the phonetic features of the given sound are left out).

Penalization points are added up when more reductions combine, e.g., if the word *ten* was pronounced as [tɔ̃] it received 3 points for parallel articulation, 1 point for [n] without stricture and 1 point for the full centralization of [ɛ]. In total it scored 5 points.

3. Results

Table 1 presents an overall distribution of segmental reduction in all the grammatical forms of the demonstrative *ten*. The forms are listed according to the proportion of the reduction detected for all the instances of each form. Apparently, the most powerful explanation for the given order is provided by the phonetic composition of the word. The lower-reduction end of the scale is mainly occupied by monosyllabic forms consisting of an articulatorily and acoustically rather stable voiceless alveolar plosive followed by a vowel (for the stability of segments in Czech see Machač 2004; Machač and Skarnitzl 2009b; Machač and Zíková 2013b, 2013c, 2013d). Not surprisingly, the least commonly reduced form is represented by the only form in

the list which belongs exclusively to the standard register. Obviously, once used, the standard form calls for its full pronunciation. Among the most reduced forms occur: a) forms consisting of two syllables, b) forms beginning with an articulatorily and acoustically highly unstable palatal plosive, and c) forms containing another segment likely to undergo reduction (such as [h] or [m]).⁴

DEM	NUMBER	REDUCED	REDUCED [%]	REDUCTION COEFFICIENT [%]
té [tɛ:] G/D.SG.F.	18	6	33	3
tý [ti:] G/D.SG.F.	139	50	36	6
ty [tɪ] N/A.PL.M.	97	50	52	9
tou I.SG.F.	60	39	65	19
tu A.SG.F.	58	38	66	11
to N/A.SG.N	37	27	73	17
tom L.SG.M.	54	40	74	17
ten N.SG.M.	153	121	79	16
ta N.SG.F.	143	116	81	14
těma [cama] I.PL.	15	13	87	11
toho G.SG.M.	116	103	89	22
těch [cɛx] G.SG.	32	31	97	12
těm [cɛm] D.PL.	4	4	100	15
tomu 3.SG.M.	11	11	100	21
tím [ci:m] I.SG.M.	48	48	100	20
<i>TEN</i> in total			75	

Table 1. *Frequency of reduction in individual demonstrative forms.*

Informative though it is, the percentage of reduced forms does not give us an idea about the relative weight of the reduction; in other words, we cannot see how serious the reduction of the form is. For this reason the reduction coefficient was devised. Its function is to express the proportional amount of reduction in a given word related to the full form of the word. More specifically, given that each sound in the word can be penalized by 3.5 points at most, each word can maximally reach

4 It should be noted that the 100% score of the form *tím* [ci:m] is probably a byproduct of the methodological decision to treat shortening of a vowel as a reduction even though the resulting form, [cim], might already be considered a fixed part of non-standard register (and hence part of the speaker's lexicon). Nevertheless, to keep the methodology consistent and to avoid speculation about the speakers' intentions we followed the same principle as with the other items.

a multiple that is 3.5 times the number of its sounds (which would mean deletion of the whole word); the reduction coefficient is then the actual reduction score of the given word divided by the maximum possible reduction score. If we now list the grammatical forms according to the reduction coefficient, the order changes slightly. The most noticeable deviations are to be observed for the forms *té*, *těch* and *těm* on the one hand and *tou* and *toho* on the other hand. These deviations are worth closer examination.

As follows from the results, reduction in the forms *těch* and *těm*, despite being common in spoken speech, is not particularly strong. The reason for reduction in this case should probably be sought in the coarticulatory effect, which is mostly visible by *těch* [cex] – palatalization of [ɛ], semi-vocalization of [x] (the form *těm* [cem] is infrequent in the data). However, reduction in the forms *tou* and *toho* is to be viewed as more serious as it is not readily explicable in terms of purely coarticulatory motivation.

As for the linguistic factors, the results are less straightforward. Out of the parameters that were analyzed, only the difference between the nominal and adnominal demonstratives appeared to be significant, as Chart 1 shows (adnominal 13.95; nominal = 11.33; $W = 56659.5$, $p = 0.013$). Neither the theme vs. rheme distinction nor the opposition between discursively prominent vs. non-prominent referents brought any significant positive results. Moreover, contrary to expectations, the demonstratives in the rheme reached even higher reduction coefficients than the demonstratives in the theme: theme = 12.83 vs. rheme = 14.17. (For some explanations see section “Conclusions and Discussion.”)

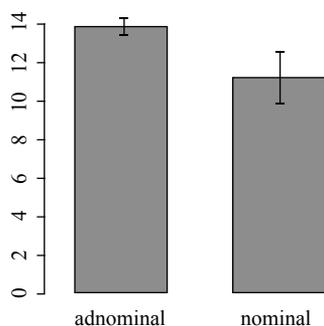


Chart 1. Average reduction coefficient of adnominal and nominal demonstrative forms (adnominal = 951, nominal = 103). Error bars indicate standard error.

If we now turn back to the phonetic parameters, we move onto more solid ground. Both the position of the demonstrative in the tone group and the type of the preceding segment appeared to be relevant (and statistically significant). In the first case items in the middle of the tone group (i.e., in every foot except the first and the last one in the tone group) tend to be significantly more reduced than those at the beginning (first foot) and those at the end (last foot) of the tone group (medial vs. initial: $W = 84810.5$,

$p < 0.001$; medial vs. final: $W = 12407$, $p = 0.017$; see Chart 2). This is in line with the general tendency to put greater emphasis on the starting and ending point of a tone group in order to allow for its clear delimitation from the continuous stream of speech (e.g., Fougeron and Keating 1997; domain-initial strengthening: e.g., Cho and Keating 2009; phrase-final lengthening: e.g., Klatt 1976; Byrd 2000).

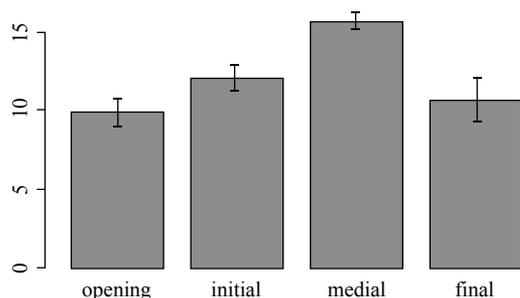


Chart 2. Reduction coefficient of the demonstrative forms in terms of their position in the tone group; opening = the very beginning of the tone group (183); initial = first foot (233); medial = second to the penultimate foot (620); final = last foot (49); $H(3, n = 1085) = 39.37$, $p < 0.001$. Error bars indicate standard error.

In the second case, there is a clear disproportion in reduction, depending on the type of the first consonant: whereas [t] was “only” reduced in 22%, the figure was not less than 40% in the case of [c]. The respective values display the different articulatory and acoustic stability of these consonants: alveolar voiceless plosives are generally rather stable in Czech, whereas palatal plosives are prone to be articulatorily modified (Machač and Zíková 2013a, 2013b, 2013c). Moreover, there is an apparent connection between the type of the preceding segment and the degree of reduction of the first consonant in the demonstrative, as Table 2 shows.

	CLOSURE > - CLOSURE	VOICELESS > VOICED
Vowel	16%	11%
Approximant	33%	18%
Nasal	22%	4%
Fricative (voiceless)	16%	0%
Plosive (voiceless)	7%	0%

Table 2. Frequency of reduction (loss of closure and change in voicing) of the first consonant in the demonstrative depending on the type of the preceding segment.

In the table the segment types are ordered on a scale from the most sonorous sounds to the least sonorous and closed ones. There is a clear connection between the feature in question and the type of the preceding segment: the more sonorous and the more open the preceding segment is, the higher the percentage of the first segment's reduction. Vowels are marked distinctly from the rest because they are not supposed to interfere with neighboring consonants to such a degree as consonants are.

To sum up, the phonetic nature of the preceding segment and the interplay between the preceding segment and the first consonant in the demonstrative appear to have an obvious impact on the amount of overall reduction.

4. Conclusions and Discussion

Let us summarize the results of the study. The hypothesis set at the beginning of this chapter was only partially confirmed. In our data, there is no apparent tendency for the demonstratives in the thematic part of the utterance to be phonetically weaker than the demonstratives in the rhematic part of the utterance. However, it has been proved that the category of adnominal demonstratives as a whole is realized in a significantly more reduced way than the category of nominal demonstratives. This finding corresponds with our knowledge of the grammaticalization of adnominal demonstratives and makes them suitable candidates for becoming a definite article. Nevertheless, such a scenario can still be only speculation at the current stage of research. Whereas the role of linguistic factors in the reduction of demonstratives remains dubious, the impact of phonetic factors is undeniable. Both the position in the tone group and the type of the preceding segment appeared to be of significant importance.

The most problematic points in the analysis were the following: a) the high proportion of pauses, restarts and hesitations commonly realized in demonstrative forms, which makes them invalid for our purposes; b) the speakers' different preferences with regard to their style of speech – there were speakers who apparently felt comfortable in standard, non-colloquial Czech and this naturally sets limits on the general level of reduction; and c) the crucial role of demonstratives in the corpora. In the picture replication task the demonstratives play an important role in delivering information about the objects being described and this is quite often displayed in the distinctiveness of the forms.

In view of the results, it seems that a purely linguistic filter operating on the syntactic and informational level of speech does not provide a sufficient basis on which to capture the intricate principles of reduction in the demonstrative *ten*. Another explanation for the rather unconvincing power of the explanatory parameters that were selected might of course lie in the methodology of perceptual evaluation and the penalization system that was devised. Let us therefore consider these and other possibilities one by one.

To start with the question of data processing, the method of careful perceptual evaluation (together with acoustic signal analysis) has already been successfully

applied in several studies (for Czech, e.g., Machač and Skarnitzl 2009a; Machač and Ziková 2013a) and appeared to be a very useful alternative to those types of phonetic analyses based mainly on acoustic measurements or articulatory observations. Nevertheless, as there appeared to be no relation between the reduction of a demonstrative and its position in the thematic vs. rhematic part in our data, we wondered whether it might be the methodology or perhaps the very nature of the demonstrative being analyzed which is to be blamed for the result. It is possible that demonstratives are just not capable of capturing linguistic structure as sensitively as phonologically and lexically more complex words are. Being functional words, demonstratives generally tend to undergo reduction more often than lexical words, so their reduction might be somewhat “conventionalized” and not directly dependent on their position in the utterance. Overall, we felt that there are many reasons to be cautious about the interpretation of the results. Therefore we carried out a follow-up inquiry in which the word *after* the (adnominal) demonstrative (mostly a substantive or adjective) was analyzed. We hoped that this procedure would help us to rule out some of the side-factors which might have blurred the results. For this purpose only 240 items were scrutinized and subjected to the same penalization procedure as the demonstrative forms before.⁵ In Table 3 the number of categorized items is given and for each category the percentage of the reduction is specified.

Number of items	T	T [%]	R	R [%]
in total	106		134	
unreduced	22	20.8	25	18.7
reduced	84	79.2	109	81.3

Table 3. *Distribution of reduced and unreduced forms in theme (T) vs. rheme (R).*

The first point to be noticed is that about 80% of all the words in the sample are in some way reduced, regardless of their position in the utterance. However, the degree of reduction is not particularly high. In fact, stronger reduction, at least in lexical words, seems to be rare in Czech.

On average, the amount of reduction in the theme part is slightly higher than that in the rheme part but the difference is not statistically significant (theme = 12.06, rheme = 11.88; $W = 7143.5$, $p > 0.1$). The tendency is particularly visible in strongly reduced forms (with a reduction coefficient higher than 20%); weakly reduced forms (below 20%) are distributed rather evenly in the theme and rheme.

⁵ Some minor modifications to the penalization system based on our current experience with the data were also suggested but as the results did not show any significant shift in either direction we decided to follow the original penalization proposal.

In sum, the follow-up analysis, together with the fact that the method works perfectly well in the case of phonetic factors, suggests that the core of the problem is rather to be sought in the adequacy of the linguistic descriptors and in the nature of spoken speech.

What makes the application of the theme vs. rheme categories particularly tricky, when one is dealing with spontaneous speech, is the fact that they are deeply rooted in written discourse. Continuous spontaneous speech, however, differs very much from the written language in terms of information structuring, both within a single utterance and in larger discursive units. What we need, then, is a thorough descriptive basis of the concepts of theme and rheme (or their like) in spontaneous speech; otherwise, every attempt to apply these categories to natural material is condemned to remain speculative at best. The results of the follow-up analysis seem to point in the same direction: if there is no significant difference to be observed between the theme and rheme realization in both the demonstrative forms and the following lexical words, then we might be inclined to think that spontaneous speech is perhaps too complex a phenomenon to be fully explicable by means of straightforwardly defined categories of theme and rheme.

4.1 Suggestion for Further Research

What is, in our opinion, worth further examination is the deeper discourse history of the demonstrative. According to our informal observation, not only is there a division of labor between pronouns such as the nominal *ten* vs. adnominal *tenhleten* vs. adnominal *ten* in the discourse but there also seems to be a tendency to realize the demonstrative *ten* in a more distinct manner when it occurs for the first time in the discourse. The more often it is mentioned, the more prone to reduction it seems to be. Interestingly, this informal observation would be in accordance with the difference between the discursive role of true demonstratives on the one hand and articles on other hand (Diessel 1999, 98). The true demonstratives, once employed in the discourse, have a topic-establishing function which means that they *establish* a recently introduced referent as the subject of the following conversation. Once established, the referent has its stable position in the discourse and is further referred to by means of the articles. To summarize our intuition, there might be phonetic principles detectable in the realization of the demonstrative in relation to a higher level of discourse and not just the sentence-level frame to which we have limited our attention so far. In any case, more information on the interplay between the function and reduction of the demonstrative is needed and for this purpose the methodology devised for the study might be employed.

Chapter Seven

Ludmila Veselovská

Possessives and Their Equivalents in English and Czech: A Comparative Study

1. Determiner Projection

In this chapter I demonstrate the semantic, morphological, and syntactic similarities between possessive (POSS) elements in English and Czech. Apart from the similarities I will point out several formal language specific characteristics of POSSs which disallow the full equivalence of the form in the two languages. Those characteristics will at the same time force the usage of the closest equivalent of POSS which in both languages is a postnominal Genitive (GEN) DPs/PPs.

First I will concentrate on similarities between the two languages. I will briefly summarize the justification for a universal nominal structure containing lexical and functional domains in Section 1.1. Then I will demonstrate a realization of a thematic hierarchy and its formal representation including possessives (POSSs) and Genitives (GENs) in Sections 2 and 3. In Sections 4 and 5 I will discuss the distinctions between the two languages, introducing the formal and interpretational equivalents. I will also mention strategies which the languages use to compensate for the specificity of their respective POSSs and at the same time to disambiguate multiple semantic roles.¹

1.1 The DP Analysis of Nominal Phrases

There is no article in Czech providing overt and direct evidence for a separate Determiner Phrase (DP) analogous to Abney's (1987) analyses of English DPs. However, due to many cross-linguistic studies, the DP projection has become a plausible universal in today's framework and can be accepted for Czech as well.

¹ This study was made with the support of the ESF grant CZ.1.07/2.3.00/20.0061 (Language Diversity and Communication) financed by the European Union and the Czech Republic. It was originally presented at TIFO (Translation and Interpreting Forum Olomouc, November 10–11, 2012) and translational (language specific) aspects are therefore often pointed out in this study at the expense of universal claims.

Concentrating on distribution and word order, this section shows some indirect evidence which suggests the existence of a DP layer in Czech nominals.²

First, let's recall the linear scheme which shows the generally accepted descriptive order of elements inside English nominal phrases, as already given in Bloomfield (1933). In (1) I summarize the prenominal order as proposed in a standard English grammar, the Oxford manual (Quirk 2004, 253), together with the authors' terminology. Notice that the initial (left side) frame in the scheme (1) is the position of the determiners, i.e., of specific elements related to the categories of number and definiteness. This external field is distinguished from the field of pre-modifiers (on the right side frame), which express a more varied scale of meanings related to the nominal head, and which is represented most frequently by projections of open class lexical adjectives.

(1) Noun structure: **linear order**

(a)	all	the	many	+ <table border="1"> <tr> <td>very handsome</td> <td>BOYS</td> </tr> <tr> <td>quite beautiful</td> <td>GIRLS</td> </tr> <tr> <td>Adj. modifiers</td> <td>+ NOUN</td> </tr> </table>	very handsome	BOYS	quite beautiful	GIRLS	Adj. modifiers	+ NOUN
very handsome	BOYS									
quite beautiful	GIRLS									
Adj. modifiers	+ NOUN									
(b)	both	those	two							
	Pre-Determiner /	Central Determiner	Post-Determiner							

The examples in (2), (3), and (4) illustrate Quirk's taxonomy of the Determiner field, which consists of three distinguishable slots. The examples provide also some of the authors' lexical entries for each of the separate slots of the Determiner template.

- (2) **Central Determiners:**
- (a) Articles (a [an] / the / Ø)
 - obligatory, unique
 - complementary with
 - (b) demonstratives (this, these/that, those)
 - (c) **Possessives**
 - (d) what/which/whose
 - (e) some/any/no
 - (f) every/each/either/neither
- (3) **Pre-Determiners:**
- general Quantifiers
 - (a) all/whole/both/half
 - (b) double/twice/three times/one third
 - (c) such / (exclamative) what
- (4) **Post-Determiners:**
- Numerals
 - (a) cardinal Numerals (three, fifty . . .)
 - (b) ordinal Numerals (third, seventeenth . . .)
 - (c) closed class Quantifiers (few/ many/ little/less/several)

² For more exhaustive argumentation in favor of the DP analysis of Czech nominal projection see the initial chapter of this monograph. The premodification field, especially the order of prenominal Adjectives in English and Czech, is compared using corpora data in Veselovská (forthcoming).

Calling the Determiner field a “template” is perhaps not the most standard use of the term, but it suggests that the number of English Determiners is restricted to a strictly given number of (at most three of usually closed class) elements in one phrase, and even more crucially, it is restricted to only one (unique) element in the middle slot designated for Central Determiners. As shown in (2), the so called possessive (POSS) belongs to the group of Central Determiners in English and as such, it shares the language specific properties of its group, namely it is subject to obligatoriness and uniqueness.

Looking briefly at the parallel linear structure of a Czech complex NP, (5) shows that Czech has a range of expressions which translate as English determiners. They appear in the same surface positions – i.e., at the left edge of the complex nominal phrase, although none of them is obligatory or unique, i.e., none has the language specific properties of English Central Determiners.

- (5) všichni

takoví	ti	jacísi	tvoji
those	the	some	your

 dobří věrní kamarádi
all good faithful friends
“all those/the good faithful friend of yours”

Considering the linear order of the elements in front of the head noun in Czech and in English, the examples in (6) suggests that both Czech and English (mostly adjective) pre-modifiers enjoy a certain level of freedom determined by pragmatic factors (? signals a marked order).

- (6) (a) CZ **malé** **hodné** **bílé** kočky
(b) EN **small** **nice** **white** kittycats
(c) CZ ? **hodné** **malé** **bílé** kočky
(d) EN ? **nice** **small** **white** kittycats

In contrast, in (7) the order of the elements belonging to the Central Determiner field is strictly grammaticalized, i.e., unique in English and fixed in Czech. Moreover, the example in (8) shows that mixing elements between the modifier and Determiner fields is **not** consistent with the required reading either.

- (7) (a) CZ **ten** **tvůj** dobrý kamarád
(b) EN ***the** **your** good friend

(c) CZ ***tvůj** **ten** dobrý kamarád

(d) EN ***your** **the** good friend
“the good friend of yours”

(8) (a) CZ (*chytrý) **ten** (*chytrý) tvůj bratranec

(b) EN (*smart) **the** (*smart) your cousin

To conclude – examples (6)–(8) argue for a specific Determiner field in the Czech noun phrase, which is distinct from the pre-modifying field and in this sense is fully comparable with the English nominal structure. The lexical entries located in the DP layer comprise in both languages the same range of elements, as was illustrated in English in (2)–(4): the quantifiers/numerals at the peripheries and demonstratives/possessives in the center.

Starting with interpretation, in the following sections I am going to describe in detail the morphosyntax of one of the lexical entries appearing in the Determiner field, namely those of the possessive (POSS). Comparing English and Czech, the data suggest a universal mapping of semantic roles to a universal binary structure of a DP.

2. Argument Interpretation of English and Czech Possessives

Concerning interpretation of POSSs, the lists from (9) to (13) are taken from the most easily available source of generic grammar.³ Notice that it gives a range of fuzzy meanings which, apart from the most frequent interpretation of physical “ownership,” i.e., possession, are apparently typical for English POSSs. Without arguing against the vagueness and incompleteness of the list, I want to point out the meanings in (12) and (13), which contain semantic concepts similar to Fillmore’s (1968) verbal semantic Cases, i.e., conceptual roles related to a verbal action like, e.g., Agent, Patient, and Theme.

(9) the person or thing to which the “possessed” stands in the **designated relationship**

e.g., my mother, his ancestor, your colleagues, our boss

(10) the person or thing of which the “possessed” is **a part**

e.g., my leg, the building’s walls, my personality

³ <http://en.wikipedia.org/wiki/Possessive>

- (11) a person or thing **affiliated** with or **identifying** with the “possessed”
e.g., *his country, our class, my people, their enemy, my counterpart*
- (12) the **performer**, or sometimes the **undergoer**, of an action
e.g., *his arrival, the government’s overthrow*
- (13) the **creator, supervisor, user**, etc., of the “possessed”
e.g., *Prince’s album, the Irish jockey’s horse, a designer’s plan*

The list above suggests that English POSS is able to carry semantic roles similar to verbal arguments.⁴ Discussing a specifically Nominal valency in terms of a Thematic Frame and/or Argument Roles, already Chomsky (1972), and then in more detail Grimshaw (1991) demonstrate that POSS and GEN attributes in English are able to carry a range of argument roles. The authors demonstrate that the top argument role related to (derived) nominals, i.e., “A1 of N,” is either Possessor or Agent and can be realized as the possessive. A parallel discussion of Czech data, concentrating on the argument interpretations, is briefly summarized below.

2.1 Nominal Arguments

(14) is taken from a traditional descriptive study by Ludvíková and Uhlířová (2011). The authors give the most standard though vague description of the range of meanings and characteristic properties of POSS in Czech without mentioning semantic roles at all.⁵

- (14) (a) Relation of **origin, creation, discovery** = “usually POSS”
(b) POSS is inherently **specific, unique/individual, concrete**

On the other hand, the examples in (15) below compare Czech and English, paraphrasing the claims made in a detailed study by Karlík (2000). The author discusses Czech derived nominals with respect to their valence and complementation. In the framework of *Remarks on Nominalization* (see Chomsky 1972), Karlík demonstrates that there is a close parallel between verbal and nominal valence in Czech (15a–c), the same one which applies in English (15b–d).

4 The meanings described in (12) and (13) are sometimes labelled as “subjective” readings – i.e., readings related to verbal subjects. These are to be differentiated from “objective,” i.e., Patient or Theme interpretations of POSS, which are absent in (9)–(11) although they are equally likely.

5 For more about interpretation of Czech Possessives see also Vachek (1954, 1972), Piřha (1992), Veselovská (2001), Karlík (2000), and Čmejřková (2003).

- (15) (a) Petr (Novák) namaloval Evu (Pospíšilovou).
 Peter_{NOM} (Novák) painted Eve_{ACC} (Pospíšilová)
- (b) Peter (Novák) painted Eve (Pospíšilová)
- (c) Petrův obraz Evy (Pospíšilové)
 Peter's_{POSS} picture Eve_{GEN} (Pospíšilová)
- (d) Peter's picture of Eve (Pospíšilová)

The example (15a–b) above moreover demonstrates that the higher, external argument role A1, e.g., a “subjective” interpretation of Agent, is marked with Nominative in a verbal projection. The same reading is assigned in (15c–d) to a POSS located on the high periphery of a nominal projection. The next, lower or internal A2 (an “objective” interpretation of Patient) is located in the position of post-verbal structural Accusative in (15a–b) or postnominal GEN in (15c–d), both of which are complement positions, adjacent to their respective heads V/N. Notice that with respect to this specific interpretation, Czech and English are the same.⁶

2.1.1 The Categorical Status of the Czech POSS

The argument interpretation of the POSS may contradict the traditional Czech linguistics which labels possessives as adjectives or a kind of hybrid category, because they have their own gender morpheme and at the same time they show agreement with the head noun. Veselovská (1998) argues in detail that Czech possessives are best analyzed as NPs, i.e., they are not so distinct from the English possessives, which are DPs. One of the arguments is given below. Notice that the Czech possessive in (16), which appears in the same field as the English one, is able to serve as antecedent to a pronoun. In (16a) a *president* is a nominal attribute, in (16b) it is a Possessive – they both are Nouns and therefore they both can be antecedents to *he* in the next clause, plausibly having a comparable referential set. The contrasting example (16c) shows that the same co-reference is not attested with true Czech adjectives.

- (16)
- (a) Před hotelem stála limuzína našeho prezidenta_i ale on_{i/j} v hotelu nebyl.
 in front of the hotel there was a limousine of our president_i but he_{i/j} was not in the hotel

⁶ Comparing Czech with English, a detailed analysis of the positions and structures of the POSS and postnominal GEN in a Principles and Parameters framework can be found in Veselovská (1998).

- (b) Před hotelem stála prezident-**ov-a**_i limuzína, ale on_{i/j} v hotelu nebyl.
 in front of the hotel there was president's_i limousine but he_{i/j} was not in the hotel
- (c) Před hotelem stála prezident-**ská**_i limuzína, ale on_i v hotelu nebyl.
 in front of the hotel there was a presidential_i limousine but he_i was not in the hotel

Czech POSS can even bind an anaphor as demonstrated below in (17). In (17a) a verbal structure is given, which shows the same properties as the nominal one with POSS in (17b) – while the contrasted adjective in (17c) cannot bind the anaphor in either Czech or English.

- (17) (a) žena_i obvykle mluví o sobě_{i/*j}
 woman_i usually talks about herself_{i/*j}
- POSS (b) žen-**in-o**_i obvyklé mluvení o sobě_{i/*j}
 woman's_i usual talking about herself_{i/*j}
- ADJ (c) žen-**ské**_i věčné mluvení o sobě_i
 feminine_{ADJ-i} permanent talking about ??self_i

Assuming only nominal elements have a referential set able to bind an anaphor, the POSSs in (17) must be nominal elements. Moreover, the ability to bind an anaphor signals that both English and Czech POSS is located in the position equivalent to the highest (external) clausal argument – subject.

Examples (16) and (17) also show a distinction between adjectival (long vowel *-ská/-ské*) agreement in (16c) and (17c) and possessive (short vowel “pronominal” *-ov-a/-in-o*) agreement in (16b) and (17b). In the latter, the morphemes *-ov*_{MASC}/*-in*_{FEM} represent the Czech gender-marked POSS morphemes.⁷

⁷ A tendency to also call the Czech morpheme *-ský/-ská* a kind of “possessive” morpheme may result from a tradition to derive all terminology from meaning. The morpheme, however, does not unambiguously express possession in Czech. See the examples below contrasting the POSS morphemes *-ův/-in-* with the generic adjectival *-ský/-ská*; the unmarked distribution of the two forms is also rather distinct.

The English equivalents *-s* and *-ian* capture the distinction quite well.

- (i) Shakespear-ův nový sonet vs. nový Shakespearov-ský sonet
 Shakespear's new sonnet vs. new Shakespear-ian sonnet
- (ii) Mariina poslední píseň vs. poslední Marián-ská píseň
 Mary's last song vs. last Mar-ian song

2.2 Semantic Role Hierarchy in an NP

A nominal valence signalled in example (16) above is still distinct from a verbal one with respect to the role of Possessor, missing with verbs, as well as with respect to the obligatoriness and ambiguity of the arguments. Grimshaw (1991) distinguished the obligatory theta roles with verbs from the optional semantic roles with Nouns, though she did not discuss the nature of the distinction.

Looking at (18), we can see that when POSS appears with the noun as the only argument, its interpretation is ambiguous – namely, *Petr/Eva* in (18) can be interpreted “subjectively,” i.e., as A1 = Possessor or Author, or also “objectively” as A2 = Theme. Exactly the same ambiguity (i.e., as both A1 and A2) is true about (19), where Czech postnominal GENs are demonstrated in the absence of POSSs.

(18) POSS-N: A1/A2 Petrův/Evin obraz
 Peter_{POSS} / Eve_{POSS} picture

(19) N-GEN: A1/A2 obraz Petra Nováka / Evy Pospíšilové
 picture [Peter Novák]_{GEN} / [Eve Pospíšilová]_{GEN}

However, there are productive and systematic ways to disambiguate the readings, and some of them operate quite universally, as demonstrated below for English and Czech. First, when POSS co-occurs with GEN – as in (16) above or (20) below – the co-occurrence of POSS and GEN forces a nonambiguous reading. In both languages, POSS obligatorily takes a higher role than GEN, thus confirming a universal semantic hierarchy proposed by Fillmore (1968) for verbs. *Mary* in both Czech and English (20) is A1, i.e., Possessor or Agent, while *Picasso*, no matter how unlikely it is, is A2 in (20), a Patient or Theme, i.e., the person portrayed on the picture.

(20) (a) Mariin obraz Picassa
 Mary_{POSS} picture Picasso_{GEN}

(b) Mary’s picture of Picasso
 “Mary = A1, Picasso = A2”

Another well-known disambiguation strategy also attested across languages, and also parallel with verbs, is shown in (21) and (22). It is the usage of a designated preposition, *by* in English and *od* in Czech NP/DP, which force the unambiguously Agentive interpretation of the following constituent. The POSS and GEN then take one of the remaining/lower roles, i.e., Possessor or Patient, in keeping with the semantic hierarchy.

(21) “Mary = A2, Picasso = A1”

(a) Mariin obraz **od** Picassa
 Mary_{POSS} picture by Picasso_{GEN}

(b) obraz naši Marie **od** Picassa
 picture our Mary_{GEN} by Picasso

(c) Mary’s picture **by** Picasso

(d) the picture of our Mary **by** Picasso

(22) (a) Maruščin obraz Picassa **od** neznámáho umělce
 Mary_{POSS} picture Picasso_{GEN} by unknown artist

(b) Mary’s picture of Picasso **by** an unknown artist
 “X = A1, Mary = A2, Picasso = A3”

Examples like (21) and (22) above lead some authors, for Czech, e.g., Karlík (2000), to claim that the structures with POSS interpreted as A2 are parallels to verbal passives with the PP equivalent to INSTR Case (a *by*-phrase in English). I am not going to develop these ideas here further, only pointing out the similarity between the two languages.

3. Structural Positions of POSS and GEN

The tree in (23) summarizes the data discussed above. It shows a nominal complex consisting of two separate projections (fields) – one formed around a lexical Noun (N) head and the other around a functional projection of a Determiner (D) head. Both N and D heads are circled in (23).⁸

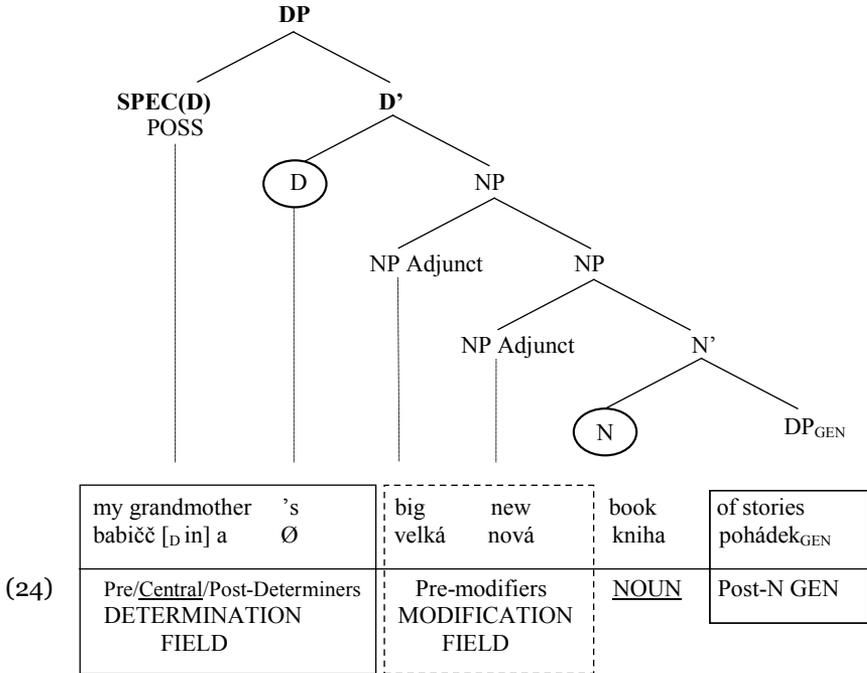
The scheme also shows the two hierarchically ordered argument positions – marked with boxes in (23) – the peripheral (external) position of the POSS, which is located in the D projection (field), namely SPEC(D). The structurally adjacent (internal) position of the postnominal GEN is the right-hand complement of a lexical N.

Notice that the scheme in (23) corresponds to the linear description in (24), which repeats Quirk’s (1). And finally, notice that there is no reason to suppose that (23) or (24) is distinct in Czech from English, in spite of the fact that Czech does not have

8 The structuralist and generative history of the NP/DP structure in English (and universally) can be followed in Bloomfield (1933), Szabolesi (1981), Chomsky (1986), and Abney (1987). For Slavic (more controversially), see Zlatić (1997), Pereltsvaig (2007), Bošković (2011), and Caruso (2012).

a *prima facie* candidate for a lexical entry realizing the D head. It is characteristic of synthetic languages, Czech being a typical example, to realize functional morphemes in the form of bound morphology instead of separate free functional words.

(23) Positions of POSS and GEN



Having described the similarities, in the next part of this chapter I am going to point out some distinctions between the two languages, concentrating on the POSS element.

4. Some Language Specific Properties of Possessives in English

First let's ask about the constituent characteristics of POSS, concentrating on English. Although the position of Central Determiner can be occupied in English by a very minimal element, e.g., an article or pronoun as in (25a), the non-pronominal English POSS in (25b) is clearly a more complex constituent. The same complex characteristics hold for the postnominal GEN, which is a prepositional phrase (PP) with a potentially complex nominal phrase following a preposition *of* in English in (25c).

- (25) (a) [_{DP} **an/my**] [_{NP} older brother living in Budapest]]
 (b) [_{DP} **your little sister Mary's**] [_{NP} old friend living in Budapest]]
 (c) the older brother [_{PP} **of** [_{DP} **mine/little Mary/the little girl in the blue coat**]]

The examples in (26–27) below show that POSS is in fact a DP, Determiner phrase, i.e., a full nominal complex, including its own Determiner field. The presence of the separate determiner of the English POSS is also indicated by a specific interpretation. Jackendoff (1977) provides examples like (26) to argue in favor of percolation of the definiteness feature from the POSS element to the whole nominal complex. Jackendoff argues that the contrast in (26a–b) is a result of the required indefinite interpretation of English NP subjects in existential structures.⁹

- (26) (a) There was [_{DP} **a daughter** of the farmer] waiting at the shop/in the barn.
 (b) *There was [_{DP} **the daughter** of a farmer] waiting at the shop/in the barn.

Analogically, Jackendoff interprets the contrast between similar examples (27). He argues that the example in (27b) is strongly marked precisely because the definite article of the POSS *the farmer's* percolates to the whole nominal complex *the farmer's daughter*, in spite of the fact that it belongs to the POSS *farmer* only.¹⁰

- (27) (a) There were [_{DP} [_{DP} **a farmer**]'s daughters] waiting at the shop/in the barn.
 (b) *There were [_{DP} [_{DP} **the farmer**]'s daughters] waiting at the shop/in the barn.

The example (28) below demonstrates that the English POSS DP can have its own premodification as in (28a) and also postmodification, as e.g., *of mine / of England / outside* in (28b, c, d).

⁹ In Jackendoff (1977) the Determiner head was not yet located outside a projection of lexical N.

¹⁰ With the exception of examples like those below, the rhematic DP position in English existential structures does not tolerate elements high on the definite scale, like DPs with definite articles, pronouns or proper names.

- (i) If you insist on buying it immediately, there is always [_{DP} [_{DP} **the shop**] next to the bus stop]].
 (ii) I was desperate to talk to somebody and then I remembered that there was always [_{DP} [_{DP} **the farmer**]'s daughter in the barn]] doing chores.

- (28) (a) [_{DP} [_{DP} **That strange young man**]'s stupid opinions about evolution] irritate me.
- (b) I lost [_{DP} [_{DP} **a friend of mine**]'s two favorite books].
- (c) [_{DP} [_{DP} **The Queen of England**]'s hat] is as wide as Mary's.
- (d) [_{DP} [_{DP} **The crowd outside**]'s slogans] angered the Prime Minister.

The undeniably phrasal characteristics of the POSS constituent makes the English morpheme *-s* a very special kind of morpheme. Contrary to a standard inflection, which is selected by a categorical head, the Possessive *-s* seems to cliticize on the phrasal boundary, irrespective of the category of the very final element.¹¹

On the other hand recall that, as mentioned above in (5) and repeated here in (29), the restricted (template) of the Determiner field in English disallows more than one Central Determiner. If there is a need to mark the larger DP specificity separately, POSS must give way to an article or demonstrative as in (29a-b). POSS is then realized using its closest equivalent – a postnominal *of*-phrase (*of*-GEN).

- (29) (a) a/my friend
- (b) *a **my** friend, *that **my** friend
- (c) a friend **of mine**, that friend **of mine**

4.1 Double Genitive

The postnominal *of*-phrase in English can contain the DP marked with a POSS morpheme *-s*. The resulting structure underlined in (30c) is traditionally labelled a double genitive.

- (30) (a) a/John's friend, that young man's friend
- (b) *a **John's** friend, *some **that young man's** friend
- (c) a friend **of John's**, some friend **of that young man's**

¹¹ For discussion within Czech comparative linguistics see already Vachek (1954). Influenced by presumably universal Indo-European patterns the author labels the morpheme *-s* derivational.

The double genitive in (30c) is an equivalent of (29c) with the independent pronoun *mine*. Both the structures require unambiguous interpretation as A1 (i.e., Possessor or Agent). Given their compatibility and ordering with another *of*-phrase, as in (31) below, the English double genitive is best analyzed as an adjunct. The distribution illustrated in (31) below signals that these PPs are located more externally than the English simple *of*-GEN.¹²

- (31) (a) a picture of John of Mary's / of mine
 (b) *a picture of Mary's of John, *a picture of mine of John
 (c) *a picture by Mary's of John, *a picture by mine of John

Considering the two postnominal *of*-phrases in (31) and (32), notice that the prepositions *of* do not assign the same Case. The objective pronoun *him* shows a structural objective Case while the agentive *mine* is apparently in Genitive.

- (32) (a) a picture of **him** of **mine**
 (b) *a picture of **mine** of **him**

The higher (adjunct) position of the English double GEN in comparison with the standard postnominal "simple" GEN is also supported by the example (33) below. (33a) is interpreted as the picture with *me* as the Patient/Theme, while in (33b) *mine* carries the role of A1, Possessor/Agent.

- (33) (a) the/his picture of me me = A2 he = A1
 (b) the/?his picture of mine me = A1 (Agent/Poss) he =A1 (Poss/Agent)¹³

The following examples support such analysis: in (34) inalienable possession, if it cannot be expressed using the prenominal POSS, requires the pronoun *mine* or a double genitive.

12 For a discussion of double genitives in English in a formal post-structuralist (generative) framework see Jackendoff (1977), Kayne (1994), or Barker (1998).

13 E.g., *He painted five portraits of his girlfriend and gave them to her best friends, including me. His picture of mine is hanging in the kitchen.*

(34)

- (a) this/my hand (a') *this my hand (a'') this hand of mine/*me
- (b) that/John's hand (b') *that John's hand (b'') that hand of John's / *John
- (c) every/mother's chair (c') *every mother's chair (c'') every chair of mother's /*mother
- (d) which/mother's dishes (d') *which mother's dishes (d'') which dishes of mother's /*mother

The examples above prove that the English *of*-phrase can appear in two structural positions, as in (23) where it is a sister of N, or as adjunct. The lower position (“simple” *of*-GEN) is marked by a structural object Case and is interpreted as A2, while the higher one (perhaps not necessarily marked by a double GEN) is interpreted as A1.

In the same time, the examples in (34') and (34'') on the right repeatedly support the general observation about the complementarity of POSS and GEN in English: if POSS is not available for the element interpreted as A1, Possessors/Agents take an alternative position in the postnominal field and are realized as the “simple” or double *of*-GEN.

To conclude, English POSS is a phrasal element which expresses the highest argument role present in the specific nominal projection. It is in complementary distribution with other Central Determiners and therefore in the presence of any of them the POSS must be realized postnominally. The postnominal position usually correlates with a more specific interpretation: a “simple” *of*-GEN carries A2 or non-argument interpretation, double *of*-GEN is a form related to A1 interpretation, and an explicit PP, a *by*-phrase, is inherently Agentive as well.

5. Some Language Specific Properties of Czech Possessives and Genitives

In this section I am going to show that the English compensation strategy, i.e., the interchange of POSS with GEN or PP, is also used in Czech – if there are reasons that force its application. I will show that the reasons are language specific, i.e., in Czech they are distinct from those applying in English.

First recall the discussion in Sections 1–3 of this chapter, which demonstrated that the Czech equivalents of English determiners appear at the left periphery of the complex DP, but contrary to English, Central Determiners are neither obligatory nor unique in Czech. The relevant examples are repeated below. (35a–b) demonstrate that contrary to English, Czech Determiners are not obligatory and (35c–d) show that the presence of elements ranking among English central Determiners does not prevent POSS from appearing prenominally in Czech and there is therefore not a reason for any alternative realization as in the English (35a).

- (35) (a) (jedna/nějaká/**moje**) kniha
 (b) *(a/some/my) book
 (c) takový nějaký **jeho** kamarád
 (d) *such that his friend
 (e) such/this friend of his

Comparing Czech with the English examples (26–31) in the preceding section, i.e., in light of the constituent characteristics and complexity of English POSSs and GENs, (36) shows that Czech postnominal structural GEN is a full nominal phrase as it also is in English (25c).

- (36) obraz **té naší malé Marie**
 picture [the our little Mary]_{GEN}
 “a/the picture of our little Mary”

As for the POSS, (34) demonstrates that the Czech POSS can be separated, i.e., extracted from a Noun phrase, and fronted independently, when contrastively stressed. Although the examples in (37b) are not unmarked options in Czech, they are fully acceptable. The assumed base position of the initial demonstrative/POSS/Adjective is marked as [-] in (37).

- (37)
 (a) Jakou si vzal [-] knihu o zvířatech?
 which REFL_{CL} took_{3SMP} [-] book about animals
 “Which book about animals did he take?”
 (b) Takovou zelenou / **Moji** / Moc velkou si vzal [-] knihu o zvířatech.
 such green/ my_{POSS} / very large REFL_{CL} took_{3SMP} [-] book about animals
 “The book about animals he took was so green/**mine**/very large.”

Notice that with respect to the fronting phenomenon, Czech POSSs behave like interrogative *wh*-constituents or AP pre-modifiers – both of which rank among phrasal constituents undergoing a phrasal movement. Therefore, based on (37) I classify Czech POSS as a phrasal constituent as well.

5.1 Restrictions on the Format of the Czech POSS

On the other hand, (38) reveals that contrary to a clearly phrasal (multiverbal) postnominal GEN in (38a), the prenominal POSS in modern Czech must be a bare phrase, i.e., a phrase consisting of “one word only.” In other words, the POSS *babiččin* (“grandmother’s”) in (38b) does not tolerate any pre- or post-modification which was possible with GEN in (36) and (38a).

(38) (a) *dům* [_{DP} **té** **mojí** **hodné** **babičky** **z** **otcovy** **strany**]
 house [the_{GEN} my_{GEN} nice_{GEN} grandmother_{GEN} of father’s side]
 “(the) house of my nice grandmother of my father’s side”

(b) (***té** /***moj?** /***hodn?**) **babiččin** (***z** **otcovy** **strany**) *dům*
 (*the/*my /*nice) grandmother_{POSS} (*of father’s side) house
 “grandmother’s house”

The bare characteristics make Czech POSSs structurally distinct from the English POSSs. The one-word-only constraint is one of the main reasons for alternative realization of the Czech potentially POSS elements in some positions other than POSS.

Looking at the format of the POSS, contrary to English phrasal characteristics in (25) and (28), the Czech POSS requires a rather specific feature content – it can be derived only from nouns in singular and animate, i.e., with intrinsic semantic gender. The following examples in (36–39) demonstrate these feature requirements.

First notice the specific morphology of Czech POSS: masculine nouns take the *-ov-* suffix followed by a Phi feature agreement. For feminine it is the synchronically less productive *-in-* suffix. There is, however, no neuter inflection equivalent to the morphemes *-ov-*/*-in-* and therefore no Czech possessive can be derived from neuter nouns like *dítě* (“child”) or *děvče* (“girl”). With neuter nouns, where POSS is not possible, the only alternatives are interpretatively equivalent postnominal GENs as in (39b) or a non-argumental generic prenominal adjective as in (39c).

(39) (a) *otcův/matčín/* **dítětův* /**děvčetův*/ **dítětin* / **děvčetin* *pokoj*
 father’s/mother’s / **child* / **girl*_{POSS(M)}/ **child*/ **girl*_{POSS(F)} *room*

(b) *pokoj* (našeho/nějakého) *dítěte/děvčete*
 room (our/some) *child/girl*_{GEN}

(c) *dětský/dívčí* *pokoj*
 child/girl_{ADJ} room

The examples in (40) demonstrate that the Czech possessive morphology *-ov-/-in-* is acceptable only with nouns high in animacy as long as only those carry a semantic gender. Apart from a few exceptions, a Czech POSS is always [+HUMAN]. (40) demonstrates that with [-HUMAN] nouns (and non-argument interpretation) only postnominal GEN is an option.

- (40) (a) **stol-ov-a* noha
 **table*_{POSS(M)} leg
 “table’s leg”
- (b) noha *stolu*
 leg *table*_{GEN}
 “the leg of the table”
- (c) **fakult-in* tajemník
 **faculty*_{POSS(F)} secretary
 “faculty’s secretary”
- (d) tajemník *fakulty*
 secretary *faculty*_{GEN}
 “secretary of the faculty”

And finally, the Czech POSS morphemes *-ov-/-in-* only combine with singular stems. (41) shows that Czech plural Nouns cannot take the POSS morphology at all.

- (41) (a) **muž-??* pokoj/matky
 **men’-??* room/mothers
 “the men’s room/mothers”
- (b) pokoj/matky (obou těch) mužů
 room/mothers (both the_{GEN}) men_{GEN}
 “the room/mothers of (both) the men”

Authors of Czech traditional grammar manuals (see, e.g., Šmilauer 1966, 1971) strain to explain the gender/number restriction on POSS in terms of some specifics of Slavic cognitive characteristics which, e.g., does not allow collective ownership; alternatively he proposes that *children* and *girls* were not individual enough to be either doers or owners. These pseudo conceptual explanations, however, cannot be defended. (42) proves that if the Noun phrases are pronominalized, there is no problem with a required interpretation: in (43a) even several very unspecific *boys* can own a car. In

(42b) and (42c) *islands* and *books* don't have to become animate to be discovered or have their names, and neither are *children* or *girls* in (42d) deprived of their own *toys* or *beds*. The restrictions are therefore clearly formal and not conceptual.

- (42) (a) Unknown **boys**_i arrived in a red car and – **jejich** auto . . .
 – their_i (= unknown boys') car . . .
- (b) The **island**_i was discovered soon and – **jeho** objev . . .
 – his_i (= the island's) discovery . . .
- (c) The **book**_i was extremely popular and – **její** jméno . . .
 – her_i (= book's) name . . .
- (d) We have a small **baby**_i and – **jeho** hračky/postýlka . . .
 – its_i (= child's) toys/bed . . .

Leaving aside any specific conceptual structures of the old Slavs, let's point out two facts which are apparent in all the examples above. First, the Czech POSS morphology *-in/-ov-* is not phrasal morphology like the English clitic morpheme *-s*, but it can only be attached to a bare Noun. Second, whenever POSS is unavailable for any formal reason, a postnominal GEN is the best and interpretatively closest alternative.¹⁴

We could see the English compensation strategy and its limits in (30)–(35). For Czech it is demonstrated in (38)–(41) above and (43)–(46) below. (43) demonstrates that when POSS cannot be realized, a Czech GEN phrase is an alternative, keeping an ambiguous equivalent to the prenominal POSS.

- (43) (a) *naš? **Maruščina** fotografie
 *our Mary_{POSS} photograph
 “our Mary's photograph” (Mary = A1/A2)
- (b) fotografie **naší Marušky**
 photograph our Mary_{GEN}
 “a photograph of our Mary /*Mary's” (Mary = A1/A2)

14 In Svozilová and Uhlířová (2011) the authors describe the complementarity between Czech POSS and GEN rather vaguely as depending “on a combination of several factors of distinct nature with distinct levels of importance and obligatoriness.” For a discussion of POSS/GEN alternatives, which does not consider the structure and feature content of the constituent, see also Uličný (forthcoming). The author refers to semantic (semantic valence), pragmatic (including politeness) and phonetic characteristics of the head Noun or POSS.

However, if the argument can be realized as POSS (with ambiguous interpretation) as in (44a), the bare GEN alternative in (44b) cannot be interpreted as A1 and becomes A2 (Patient/Theme), similarly to an English “simple” *of*-GEN.

- (44) (a) (jedna) **Maruščina** fotografie
 (one) Mary_{POSS} photograph
 “a photograph of Mary/Mary’s” (Mary = A1/A2)
- (b) jedna fotografie **Marušky**
 one photograph Mary_{GEN}
 “a photograph of Mary /*Mary’s” (Mary = A2/*A1)

With personal pronouns, where the Czech POSS is always available, GEN is not an option at all.¹⁵

- (45) (a) nějaká **moje** kniha
 some my book
 “some book of mine”
- (b) *nějaká kniha **mne/mě**
 some book me_{GEN}
 *“some book of me”

On the other hand, polarity pronouns like *nikdo* (“nobody”) do not carry inherent gender in Czech and therefore they cannot form POSS. A postnominal GEN is then the only option and its interpretation remains vague.

- (c) obraz **nikoho**
 picture [nobody]_{GEN}
 “**nobody’s** picture”

¹⁵ Unless coordinated or modified as below.

- (i) obrázek mne/mě a tebe
 picture me_{GEN} and you_{GEN}
 “a picture of me and you”
 obrázek jenom tebe
- (ii)
 picture only you_{GEN}
 “a picture of only you”

Apart from a poorly understood restriction on pronouns illustrated above, Czech also does not have equivalents of the English double *of*-GENs given in (34), which were able to disambiguate the semantic roles. The highest A1 role can be expressed as one of the possible roles of the ambiguous complex GEN as in (43) above, or it can be realized by means of the PP, the equivalent of the English *by*-phrase. The ordering of GEN and such a PP is obligatory and it suggests an adjunct analysis of the *od* (“by/from”) PP. It is demonstrated in (46a) below with *Mary* = A1 and *John* = A2. However, (46c) shows that contrary to English *by*, the Czech preposition *od* (“by/from”) does not have intrinsically agentive interpretation. It can introduce Agents as well as, e.g., donators, because it has a possible directional interpretation as well. If *od* (“by/from”) is introducing a non-argument, the POSS remains ambiguous because it is the only semantic role present.

- (46) (a) jeden obraz Jana od Marie
 one picture John_{GEN} by Mary
- (b) *jeden obraz od Marie Jana
 one picture by Mary John_{GEN}
- (c) Janův obrázek od Marie
 John_{POSS} picture by/from Mary
 “John’s picture by Mary/from Mary”

Concluding the section dealing with language specific characteristics of the Czech POSS, we have seen that it is a bare [+HUMAN, SINGULAR] element located in the high periphery of the Czech DP. As in English, it is the position realizing the highest semantic role present in the nominal projection. Contrary to English, however, the argument interpretation is obligatory in Czech. Apart from the formal restrictions, i.e., its bare [+HUMAN, SINGULAR] characteristics, Czech POSS must be a semantic argument of the noun and it does not allow so easily a generic interpretation, which makes it distinct from English POSS allowing a range of meanings.¹⁶

If the Czech language specific formal or semantic reasons prevent the element from being realized as POSS, the closest equivalent is the postnominal GEN. When the realization as GEN is forced, the interpretation remains ambiguous. On the other hand, when the choice of GEN is not forced, i.e., the constituent fulfils the constraints on Czech POSS, the postnominal, bare, [+HUMAN, SINGULAR] GEN

16 See (9) above. The same topic is discussed in more detail by Chomsky (1972), Grimshaw (1991), and many others. For the exclusively argumental interpretation of the Czech POSS see Veselovská (1998) and Karlík (2000).

is interpreted preferably as A2, similarly to the English “simple” GEN. The only disambiguating strategy forcing the A1 reading in the postnominal position in Czech is a PP using the preposition *od* (“by”).

6. Equivalents Forced by the Language Specific Properties of Poss

I have demonstrated that English and Czech nominal projections are formally the same in that they both contain lexical and functional projections (DP) hosting specific lexical entries – one of which is a POSS element. Both Czech and English nominal complexes allow a realization of semantic arguments including a noun-specific role of the Possessor, which represents (together with Agent) the highest semantic role (A1). The argument hierarchy applies to the hierarchically ordered prenominal POSS and postnominal GEN positions. It is identical in the two languages and can be summarized as follows (47).

- (47) Constitutional hierarchy for the Argument roles inside the DP
- (a) *od/by*-PP
 - (b) (i) POSS
 - (ii) double/complex GEN
 - (c) simple/bare GEN

Considering the above hierarchy, both languages also take into account a kind of more or less obligatory economy criterion. In both English and Czech the highest formal form, i.e., the unambiguous *od/by*-PP variety is taken as less economical than the POSS and GEN, and they opt for the *od/by*-PP only in cases when clear interpretation is required and the other options are unavailable. Both languages also prefer the GEN argument position, i.e., the position “lower” in a hierarchy, only in case the higher one (i.e., POSS) is formally inaccessible.

Apart from a bit of vaguely defined economy, the discussion and examples in this study demonstrate that in both English and Czech the format of the element in the position of POSS is restricted by strictly morphosyntactic characteristics which are language specific. In Czech they are (i) a bare characteristics of the POSS morphology, and (ii) gender and number feature restrictions on POSS. In English it is the uniqueness of the position of Central Determiner, i.e., the uniqueness of the head D housing the phrasal *-’s* morphology of POSS.

In both languages the phrasal postnominal GEN is the closest equivalent of the POSS. The occurrence of such GENs is in most contexts predictable – they are the elements which did not have the semantic or formal properties allowing them to become POSSs. In both English and Czech, the GENs which do fulfil the language specific constraints on POSS (i.e., those which could be realized as POSSs), carry

a restricted interpretation of A2 only. To express the unambiguous A1 postnominally, English can use a double GEN, and both languages have a disambiguating strategy applying prepositions *od/by*.

The examples in (48–52) summarize and illustrate the choice of alternatives discussed above. First I concentrate on examples when the format in Czech and English is the same, then on examples when the same interpretation requires a distinct form.

(48) shows English and Czech POSSs which are ambiguous as long as they are the only arguments of the noun.

(48) Cz **POSS** → Eng **POSS**

CZ (a) **můj/Petrův** bratr/obraz POSS = A1/A2
my/Peter_{POSS} brother/picture

ENG (b) **my/Peter's** brother/picture POSS = A1/A2

While (48) demonstrated ambiguous simple POSSs occurring in both languages, (49) and (50) show that with GENs, English can be more specific than Czech. In (49a–b) a Czech complex postnominal GEN remains ambiguous as long as its realization is forced by its structure. The English counterpart is either a “simple” *of*-GEN with a preferred A2 interpretation or as double *of*-GEN with A1 reading. Only if the Czech postnominal GEN is bare (i.e., it could become POSS) (49c), its interpretation is preferably A2 and its full English equivalent is then a “simple” *of*-GEN (49d).

(49) Cz **GEN** → Eng **GEN**

CZ (a) obraz **mého přítele** complex GEN = A1/A2
picture my friend_{GEN}

ENG (b) a picture **of my friend's** double GEN = A1
(b') a picture **of my friend** “simple” GEN = A2

CZ (c) obraz **přítele** bare GEN = A2
picture friend_{GEN}

ENG (d) a picture **of my friend** “simple” GEN = A2

In (50) the Czech POSSs appear together with another element qualifying as Central Determiner in English. Given the language specific uniqueness constraint for Central Determiners, English cannot translate it as POSS and postnominal GEN is forced, which is at the same time able to disambiguate the interpretation.

(50) Cz **POSS** → Eng **of-GEN**

CZ (a) ten **můj/Petrův** obraz POSS = A1/A2
 the my/Peter_{POSS} picture

ENG (b) the picture **of mine/Peter's** double GEN = A1
 (b') the picture **of me/Peter** "simple" GEN = A2

In (51) below the English POSS cannot be translated as POSS in Czech given the language specific constraints on the POSS form. The argument in (51a) is too complex to be realized as POSS in Czech and therefore it must be realized as GEN. Because the GEN form is forced, it remains ambiguous in the same way as the English complex POSS.

(51) Cz **GEN** → Eng **POSS**

CZ (a) Obraz **mého bratra**
 picture [my brother]_{GEN} = A1/A2

ENG (b) **my brother's** picture = A1/A2

In (52) examples of English non-argument POSSs are given which in Czech cannot become POSS. They can be replaced by non-argumental GENs, generic Adjectives, or various PPs.

(52) **GEN/AP/PP** → **POSS**

CZ (a) struktura **románu**
 structure [novel]_{GEN}

ENG (b) **the novel's** structure

CZ (c) **zemská** oběžná dráha
 Earth_{ADJ} orbit

ENG (d) **Earth's** orbit

CZ (e) u **Toma**
 at Tom_{GEN}

ENG (f) at **Tom's**

CZ (g) hodný **jejich peněz**
worth_{ADJ} [their money]_{GEN}

ENG (h) **their money's** worth

Competent translation entails the judicious blending of both semantic/functional and formal equivalents. This chapter demonstrated that although Czech and English have seemingly adequate equivalents of POSSs and/or postnominal GENs, the language specific formal characteristics of especially the POSS element are nontrivial. The distinctions in the morphosyntax of POSSs characteristics in the two languages consequently lead to distinct formal equivalents of otherwise functional and interpretative equivalents. The choice of the form, however, is not random or instinctive but it can be predicted and evaluated while using a correct structural analysis of the two languages.

Chapter Eight

Andrea Hudousková

Analyticity and Syntheticity: What the Mistakes in DPs of L2 Learners Reveal about the Structure of Chinese and Czech

1. Introduction

This chapter focuses on mistakes in forming Czech DPs¹ that beginner and lower-intermediate native Chinese learners make while acquiring Czech as a second language. More specifically, as highlighted in (1a), a nominal attribute is used instead of the correct denominal adjective as in (1b).

- (1) (a) *Jsem **změna**_N studentka z Číny.
be_{1.SG.PRES} exchange student from China
“I’m an exchange student from China.”

- (b) Jsem **výměnná**_A studentka z Číny.

The mistake in (1a) is presumably due to the structure of the corresponding Chinese DPs, shown in (2).

- (2) jiaohuan_N de xuesheng
exchange DE student
“exchange student”

As can be seen in (2), the nominal *jiaohuan* is attached to the modified noun *xuesheng* by the particle *de*, which allows the former to be interpreted as an attribute of the latter.

¹ DP stands for a noun phrase. See Section 4 for details.

On the other hand, in Czech the attribute has to have an adjectival form in order to modify a noun, which is the reason for difficulties in the process of L2 acquisition.

The chapter is organized as follows. Section 2 introduces some morphosyntactic characteristics of Chinese and Czech that are relevant for the issue at hand and provides a brief comparison with English. Section 3 deals with the syntactic properties of the Chinese particle *de*. In Section 4, I put forward a generative proposal to account for the data and the assumed process of L2 acquisition. Section 5 is a conclusion.

I claim that the mistakes of Chinese learners in Czech DPs are not due to the different phrase structures of the two languages. Arguing that the structure of DPs is identical in both Czech and Chinese, I account for their different architecture in terms of the value of syntactic features on relevant syntactic heads, namely feature strength and interpretability.

2. A Comparison between Chinese, English, and Czech

As regards the morphosyntactic typology of Chinese, it is an analytic language. Generally, according to Skalička (1951),² this language type is characterized by the fact that words do not change their form and the morphemes are free, not being bound to other lexical items. An ideal analytic language lacks the grammatical category of gender, only rarely expresses grammatical number and has no agreement. On the other hand, it is abundant in prepositions, conjunctions and particles. The word order is fixed and the parts of speech are not strictly differentiated. That is, in an analytic language the syntactic position of a word is more important than its morphological form.³

Indeed, Chinese does not distinguish grammatical categories of case, gender, number,⁴ tense, and voice and it uses particles to express aspect and mood, for instance. It is characterized by a rigid word order subject – adjunct – verb – object.

Huang (2010) argues for a “metaparameter of analyticity” for Chinese, defined, among many others, by the use of so-called light verb constructions. Light verbs serve to verbalize another word and have an abstract meaning of an action and

2 Skalička classifies Chinese as a polysynthetic language, which, on a par with isolating languages, displays analytic properties.

3 As Skalička (1951) points out, there are no pure types of languages. Every individual language is a mixture of several language types, one of which is dominant.

4 The grammatical category of gender is expressed only in the written form of the 3rd person singular personal pronouns. The category of number is overtly marked in personal pronouns and potentially also in some noun phrases denoting human beings, as shown in (i). Cf. Ross and Ma (2006).

(i) (a) wo – women, ni – nimen, ta – tamen
I – we, you (sg.) – you (pl.), (s)he – they

(b) pengyou – pengyoumen
friend – friends

thus may be paraphrased by the English verb *do*. Chinese denominals are formed with the light verb *da*, which originally means “to hit.” However, when followed by a noun, it has a vague meaning of “do with”; see the examples in (3).

- (3) (a) *da yu*
do fish
“to fish”
- (b) *da dianhua*
do phone
“to phone”

In contrast, English forms denominal verbs productively by conversion, i.e., without using an overt marker of verbalization, as illustrated by the examples in (4).⁵

- (4) (a) a fish – to fish
- (b) a phone – to phone

To put it differently, English may be assumed to have a phonetically empty light verb; see the discussion in Section 4.2. On the other hand, Czech has to use a verbal suffix in the process of verbalization, as demonstrated in (5).

- (5) (a) *rybař-it*
fisherman-suffix
- (b) *telefon-ovat*
telephone-suffix

Another function of the Chinese light verb *da* is to form causatives with unaccusative verbs, as shown in (6).

- (6) *da po*
cause break
“cause to break”

5 Apart from conversion, English also makes use of verbal affixes, especially of *-ize* and less commonly of *-ify*, as exemplified in (i).

- (i) (a) *itemize*
(b) *acidify*

On the other hand, the English verb *to break* may have both causative and unaccusative (inchoative) meanings. Hence, in contrast to Chinese, the causative head in English is again phonetically null. Czech, in turn, uses a reflexive morpheme or verbal suffixes to derive unaccusative verbs, as shown in (7) and (8), respectively.

- (7) (a) *rozbít*
 “cause to break”
- (b) *rozbít se*
 “to break” (inchoative)
- (8) (a) *chlad-it*
 “cause to cool down”
- (b) *chlad-nout*
 “to cool down” (inchoative)

Typologically, Czech can be thought of as the opposite of Chinese. As we saw above, it is a highly inflectional language, which is characterized by bound morphemes that typically cumulate several grammatical meanings (cf. Skalička 1951). The rich inventory of inflectional and derivational morphemes serves to express grammatical categories, form new words and change their part of speech. Czech possesses many types of declensions and conjugations, which indicate grammatical categories of case and number on nouns and categories of person, mode and tense on verbs, respectively. Agreement is typical of inflectional languages: in Czech, adjectives, pronouns and numerals agree with nouns and verbs do so with nouns and pronouns. As all syntactic relations are expressed morphologically, the word order of Czech is relatively free. In contrast to Chinese, all parts of speech are clearly distinguished by the form of a word, regardless of the syntactic context.

3. Chinese Particle *De*

In general, the Chinese particle *de* serves to mark the phrase that it is part of as a nominal. More specifically, according to Zhang (1999), it has three functions:

I. The particle *de* occurs between two phrases and marks them as a nominal, as demonstrated in (9) and (10);

- (9) zhei ben shu **de** fengpi hen piaoliang (Zhang 1999, 27)
 this-one CL⁶ book DE cover very beautiful
 “The cover of this book is beautiful.”

- (10) zhei ben shu **de** chuban hen zhongyao (Zhang 1999, 27)
 this-one CL book DE publish very important
 “The publication of this book is important.”

II. The particle *de* may also follow an NP, AP or VP and again mark the phrase as nominal, as shown in (11);

- (11) suliao zhuozi bi **mutou** **de** geng quingbian (Zhang 1999, 28)
 plastic table than wood DE more light
 “Plastic tables are lighter than wooden ones.”

In the above examples (9) to (11), the particle *de* is a nominalizing element. Therefore it may be conceived as bearing an abstract meaning of an entity, as pointed out by Zhang (1999);

III. The word(s) preceding the particle *de* count as attributes, as illustrated by the Chinese examples (12a)–(14a). Czech, in contrast, requires a different strategy for a word to modify a noun, as can be seen in (12b)–(14b). In (12b), the noun “children” either changes to an adjective or it is used in a (possessive) genitive form.⁷ Similarly, in (13b) the verb “to write” occurs in the form of a deverbal adjective in order to be able to modify the noun. In the case of a whole clause, as in (14b), an attributive relative clause is used.

- (12) (a) haizi **de** yifu (Ross and Ma 2006, 50)
 child_N DE clothes

- (b) dětské oblečení / oblečení dítěte
 children_A clothes / clothes child_{GEN}
 “children’s clothes / clothes of a child”

6 CL stands for classifier, which occurs with nouns preceded by a specifier and/or number (cf. Ross and Ma 2006).

7 The deverbal adjective on one hand and the genitive case on the other have different meanings. While the former is interpreted as a collective possessive (clothes for children in general), the latter expresses possession by an individual (the clothes of a child). The Chinese expression in (12a) can be interpreted in both ways. However, individual possession may be emphasized by the use of a personal pronoun.

- (13) (a) xie **de** zi (Ross and Ma 2006, 52)
 write_v DE character
- (b) napsaný znak
 written_A character
- (14) (a) wo xihuan **de** che (Ross and Ma 2006, 51)
 I like DE car
- (b) auto, které mám rád
 car that I-like

To summarize, while in Chinese the particle *de* indicates the attributive value of the preceding word(s), in Czech the attribute is marked morphosyntactically. The attribute occurs in the form of an adjective, genitive case or a relative clause.

4. Generative Account

In this section I put forward a generative account of the data given in Section 3 within the minimalist framework (cf. Chomsky 1995, 2000), which is the most recent version of the principles and parameters theory. The latter assumes the existence of a fixed number of principles common for all languages and a finite number of binary parameters, the particular setting of which is responsible for language variation. Ideally, every rule should subsume a cluster of related properties and thus account not only for one but rather for several interdependent language features. In this view, language acquisition consists of redefining parameters and fixing their correct value in the target language.

4.1 Some Theoretical Background

The line of reasoning put forward in the following subsections relies on the notion of so-called light heads, namely light *v* and light *n*. A light verb⁸ is a functional head responsible for transitivity and agentivity. In other words, it takes a complement and creates a syntactic position for an agent in its specifier. Importantly for the present discussion, apart from a verbal complement, it may take a nominal one to derive a denominal verb (cf. 4.2). The light verb is semantically and phonetically weak and it has no regular selectional properties of its own as other autosemantic verbs do. It has a vague verbal meaning of an activity and in many languages it is phonetically null. However, in Chinese it is overtly realized; see the discussion in Subsection 4.2.

8 Cf. Chomsky (1995) and also Larson (1988) and Hale and Keyser (1993).

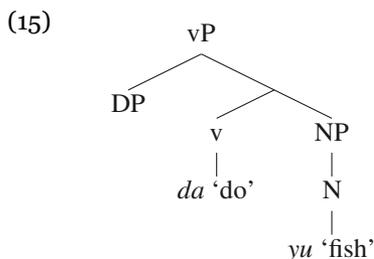
As regards noun phrases, it is claimed that they mirror the clausal/verbal structure, i.e., they contain a DP and possibly also an nP layer (cf. Abney 1987; for Czech Veselovská 1998). Similarly to the light verb, the light *n* is devoid of any semantics of its own and bears the abstract notion of an entity (cf. Zhang 1999).

Since the analytic phrase structure of the vP and DP was hypothesized both on semantic and syntactic grounds, it is supposed to be universal, i.e., identical in all languages, irrespective of the concrete realization of the functional heads.

In the following subsections, I will first analyze the vPs in Chinese and in Czech so as to make the notion of light heads more transparent. Then I will draw the reader's attention to the structure of DPs, pinpointing throughout the crucial differences between the two languages resulting from their analytic and synthetic nature, respectively.

4.2 Light Verbs versus Denominalization

As already noted in Section 2, English and Chinese differ in that the light verb is a phonetically empty syntactic position in the former, while it is overtly expressed in the latter. The structure of the Chinese denominal verb “to fish” is given in (15).

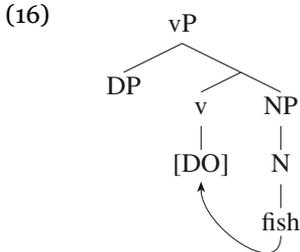


As argued by Huang (2010), in Chinese the position of the light *v* is occupied by an autonomous lexical item, namely *da*, which blocks movement from N to *v*, i.e., a PF incorporation of the nominal stem to the functional verbal head.

An analysis along these lines supports the idea of cross-categorial stems put forth in the literature (cf. Hale and Keyser 1993, Marantz 1997 and many others). In other terms, the syntactic head *yu* in isolation is not category specified and it becomes a verb only by virtue of merging with the verbal head *da*. This account corresponds to Marantz's (1997, 215) claim that “roots . . . are category neutral, neutral between N and V. When the roots are placed in a nominal environment, the result is a “nominalization”; when the roots are placed in a verbal environment, they become verbs.”

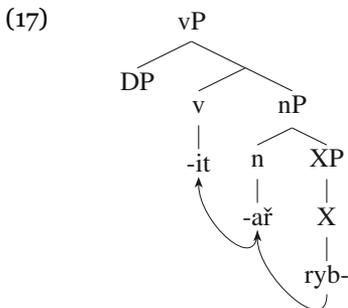
In English, verbalization proceeds in a different way. The non-categorial stem *fish* is merged with the verbal head *v* to become a verb. However, no overt lexical element occurs in the position of the light verb, as noted by Hale and Keyser (1993): “. . . the head N of the NP governed by the V is moved and adjoined to the latter. The

resulting “compound,” of which only the N component is phonologically realized, corresponds to the denominal verb.” This is shown in (16).



On the assumption that the structure of the vP is universal, for English it is necessary to suppose a phonetically null abstract light verb [DO] in the position of *v*.⁹ As this phonetically null element cannot exist independently, it searches for convenient lexical material to attach to. In more technical terms, it bears a strong feature, which induces movement of overt lexical material into *v*.

In Czech, the situation is similar to English, except that the light verb is not null but affixal. Nevertheless, the affix cannot stand alone and therefore it attracts overt lexical material, as demonstrated in (17).

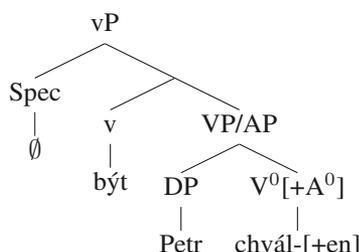


As shown in (17), the non-categorical stem *ryb-* merges with the nominal suffix *-ař*, which in turn merges with the verbal suffix *-it*, finally giving rise to the verb *rybařit*. To summarize, phonetically null and affixal heads are too weak to exist independently. Hence, they attract overt lexical material in order to be phonetically supported. In other words, phonetically weak elements bear a [+strong] feature, which triggers syntactic movement. On the other hand, autonomous lexical items are [-strong] and therefore block movement to the position in which they occur.

⁹ Note that minimalism denies the existence of empty syntactic positions (cf. Chomsky 1995).

Interestingly, further evidence for the proposed analysis comes from Veselovská and Karlík's (2004) analysis of the Czech periphrastic passive. On their account, the head *v* in this construction is occupied by the auxiliary *být* "to be," which blocks movement of the lexical head *V*. In the active construction, on the other hand, the verbal head would move up to the empty *v*. The hypothesized syntactic structure of the Czech passive is given in (18).

- (18) *být* Petr chválen
 be Peter praised
 "Peter be praised."



The syntactic structure (18) resembles the one in (15) in that the light *v* position is filled with a lexical item that does not need to be attached to another one in order to be pronounced. The movement to the *v* head is thus blocked, contrary to what is observed with phonetically weak or null elements.

4.3 Substantivization and Modification of the Particle *De*

As noted in 4.1, in the minimalist framework the DP is assumed to mirror the structure of the *vP/TP*. Building on this assumption, Veselovská (2008) argues for the structure of Czech DPs shown in (19). The distribution of Chinese elements in (19) is mine.

- (19)
-
- ```

graph TD
 DP --> DEM
 DP --> DP2[DP]
 DP2 --> Spec_DP[Spec(DP)
POSS]
 DP2 --> nP
 nP --> D
 D --> de
 nP --> NP1[NP]
 NP1 --> Spec_n[Spec(n)
(a) haizi
(b) dětské]
 NP1 --> NP2[NP]
 NP2 --> n
 n --> de_b["(a) de
(b) ∅"]
 NP2 --> DP_GEN
 DP_GEN --> N
 N --> yifu["(a) yifu
(b) oblečení"]
 DP_GEN --> DP_GEN_empty[]

```

As shown in (19), the NP is the complement of the light head *n*, which is phonetically null in Czech. As such, it cannot stand alone and thus triggers movement of the overt material from the lexical head N. The complex head N+n counts as a noun and has to be modified by an adjective in Spec, nP.

On the other hand, in Chinese the head *n* is occupied by the particle *de*, which blocks the movement from N. By virtue of the presence of *de* in *n*, the head N is interpreted as a noun and Spec (*n*) as an attribute.

Note that not only do the Chinese and Czech *n* heads differ in their strength, but they also contrast in interpretability. As mentioned in Section 3, the Chinese particle *de* bears the abstract meaning of an entity and thus may be claimed to be [+interpretable].<sup>10</sup> On the other hand, Czech *n* is [-interpretable], as it is a purely formal element that has no meaning of its own. The syntactic relation between the attribute and the noun is thus signaled morphologically by the agreeing adjectival form of the former.

It can be surmised that in the process of L2 acquisition, Chinese speakers expect the Czech head *n* to behave on a par with the Chinese light noun expressed by the particle *de*. Nevertheless, unlike the Chinese particle *de*, the Czech light head *n* is empty, [-interpretable] and [+strong]. Hence, it is a formal element with no semantics per se, which only subsumes the lexical item within the formal class of nouns. As a phonetically weak element it triggers syntactic movement and combines with the lexical head N. The syntactic relation of the complex head N+n and a possible attribute is then indicated by an adjectival modification.

To sum up, the presumable source of the mistakes noted in Section 1 is the learners' conviction that the nature of light nouns in the two languages is identical, even though the head *n* is overt in Chinese and null in Czech. However, in reality, the functional heads differ in their feature specification, which implies that their interpretation and syntactic behavior are different.

#### 4.4 Functional Head Realization Parameter

Although both Chinese and Czech presumably build on the same phrase structure, they spell it out in different ways. Chinese light verbs and nouns are realized as phonetically autonomous lexical items with the abstract meaning of an action or an entity, respectively. As such, they bear [-strong] and [+interpretable] features. Since they are capable of independent existence, they do not need to attract any lexical material to merge with and thus block overt lexical movement to functional heads. Consequently, as virtually everything stays in situ, Chinese displays

<sup>10</sup> Note that the notion of interpretability, following Zhang (1999) here, departs from Chomsky's (2000) approach. In Chomsky's view, interpretable features are inherent to lexical items, while uninterpretable ones are morphosyntactic and have to be valued and eliminated in the course of the syntactic derivation.

the Kaynean base word order subject – adjunct – head – complement and also gives evidence of the underlying phrase structure. Moreover, this analysis supports Skalička's (1951) claim that the category of isolated words in analytic languages is vague and becomes specified only by virtue of its syntactic environment.

On the other hand, the Czech light heads *v* and *n* are either affixal or null and thus cannot be pronounced independently. Therefore, they are claimed to bear a [+strong] feature, which triggers movement of lexical material that would support the phonetically weak material in the functional head. Since affixes are inseparable parts of lexical items, the category of the latter is well determined in synthetic languages, as noted by Skalička (1951). Furthermore, Czech light heads are [–interpretable], as they have no meaning of their own. That is, they do not identify the lexical item that they are part of as an entity, quality, state, process, action etc., but just indicate its appurtenance to the formal class of verbs or nouns. The difference between Chinese and Czech is summarized in (20).

(20)

| Chinese                                                                                     | Czech                                                     |
|---------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| overt non-affixal light categories ( <i>da</i> , <i>de</i> )<br>blocking syntactic movement | affixal/zero light categories triggering<br>head movement |

Note that the contrast depicted in the chart above (20) may also be extended to other functional categories, i.e., Complementizer, Tense, Determiner etc., Czech showing a greater degree of grammaticalization of functional lexical items overall.

## 5. Conclusions

In this chapter I searched for the source of mistakes that Chinese learners make in Czech DPs. More specifically, when modifying a noun they use a nominal attribute instead of the correct denominal adjective. I claimed that the phrase structure of DPs in both languages is the same and that it is the strength and interpretability of features on functional heads that underlies the different forms and interpretations in the two languages.

As argued by Huang (2010), Chinese is an analytical language, which overtly spells out functional heads. More specifically, the light *n* in Chinese DPs is lexicalized by the particle *de*. The latter turns the phrase into a nominal and allows the immediately preceding lexical items to be interpreted as an attribute. The particle *de* is claimed to bear [+interpretable, –strong] features, as it has the abstract meaning of an entity (cf. Zhang 1999) and does not attract any lexical material to *n*. As a matter of fact, it blocks movement into *n* and the surface order of Chinese lexical items thus gives evidence of the underlying universal phrase structure.

Czech, on the other hand, is an inflectional language with empty or affixal functional heads that were argued to be [–interpretable, +strong]. Czech light heads

are purely formal, grammaticalized elements that have no meaning per se and only classify a lexical item as a noun or a verb. Since they are phonetically weak, they are not able to exist separately and thus search for lexical material that moves up to the functional position to combine with them.

In this view, language variation is a matter of feature specification. L2 acquisition thus consists of switching the analyticity/syntheticity parameter, namely resetting the parameter of feature strength and interpretability, which is responsible for, inter alia, the form of attributes in Czech and Chinese DPs.

# **Section** Three

The Left Periphery  
of the DP

# Chapter Nine

Bożena Cetnarowska

## The Topic Phrase within a Determiner Phrase: Fronting Adnominal Genitives in Polish

### 1. Preliminary Remarks

Adnominal genitives in Polish typically follow their head nouns. Examples (1a) and (2a) illustrate the unmarked word order<sup>1</sup> in a Polish noun phrase. In colloquial (especially spoken) Polish, adnominal genitives can also be found in the pre-head position, as in (1b) and (2b).

- (1) (a) Torebka      Zosi            leży            na stole    w    kuchni.  
         handbag    Zosia.GEN    lie.PRES.3SG    on table    in    kitchen  
         “Sophie’s handbag is lying on the table in the kitchen.”
- (b) Zosi            torebka      leży            na stole    w    kuchni.  
         Zosia.GEN    handbag      lie.PRES.3SG    on table    in    kitchen
- (2) (a) Emerytura      dziadka            była            znacznie      niższa.  
         pension        grandpa.GEN    was.3SG    considerably    lower  
         “Grandpa’s pension was considerably lower.”

<sup>1</sup> Data selected from the National Corpus of Polish (NKJP) indicate that the linearization pattern N+GenP is more common than the marked GenP+N order. For instance, there are 91 occurrences of the phrase *portret mężczyzny* (lit. portrait.NOM man.GEN) and no instances of the reverse order *mężczyzny portret* (lit. man.GEN portrait.NOM) in the full NKJP corpus examined via the Pelcra corpus search engine. For the phrase used in (2), the NKJP corpus counts are as follows: *emerytura dziadka* (N+GenP): 3 instances; *dziadka emerytura* (GenP+N): 1 instance. No examples of the N+GenP or GenP+N phrases from (1) occur in the corpus, but one can compare *torebka kobiety* (handbag.NOM woman.GEN): 7 instances; and *kobiety torebka* (woman.GEN handbag.NOM): 2 instances.

- |             |           |         |              |         |
|-------------|-----------|---------|--------------|---------|
| (b) Dziadka | emerytura | była    | znacznie     | nizsza. |
| grandpa.GEN | pension   | was.3SG | considerably | lower   |

The availability of the marked order exemplified in (1b) and (2b) contrasts with the scarcity of possessive adjectives (PAs) in Polish, terminating in the suffix *-ow* or *-in*. While possessive pronouns frequently occupy the pre-head position in DPs, as shown in (3a–b), possessive adjectives derived from Christian names, kinship terms, or titles and professions, are rarely attested in contemporary Polish since they tend to be regarded as old-fashioned or dialectal (especially PAs which contain the suffix *-in*).

- (3) (a) *twoja torebka* “your handbag”  
 (b) *jego emerytura* “his pension”  
 (c) ?\* *Zosina torebka* (lit. *Zosia.PA handbag*) “Sophie’s handbag”  
 (d) ?\* *Hanczyna emerytura* (lit. *Hanka.PA pension*) “Hannah’s pension”  
 (e) ?? *dziadkowa emerytura* (lit. *grandpa.PA pension*) “grandpa’s pension”

Polish differs in this respect from other Slavonic languages (as observed by Corbett 1987), in particular Czech, where possessive adjectives can be derived in a fairly regular manner (discussed in Veselovská 1998).

It will be argued below that the operation of genitive preposing (which is partly motivated by the unproductivity of PA formation in Polish) can be regarded as a movement of GenP to the specifier of the DP-internal Topic Phrase (i.e., the external merge of the adnominal genitive in Spec, TopP).

The layout of this chapter is as follows. Section 2 summarizes previous accounts of preposed adnominal genitives in Polish. Section 3 presents some restrictions on the process of genitive fronting. It is argued that, apart from being referential, fronted genitive DPs are definite and specific. In Section 4 the assumptions of the Split DP Hypothesis are presented briefly. The relative position of fronted genitives and pronominal adjectives and/or determiners is discussed in Section 5. Section 6 mentions other constituents of a noun phrase which may be regarded as topicalized. Conclusions are stated in Section 7.

## 2. Previous Research on Polish Pronominal Genitives

The possibility of pronominal placement of genitives in Polish is noted by, among others, Topolińska (1984) and Rozwadowska (1997). A more detailed discussion of genitive fronting can be found in Migdalski (2001, 2003) and Rappaport (1995, 2000, 2004).

Rappaport (1995, 350–351) postulates two principles determining NP-internal word order in Polish. The morphological principle predicts that

non-agreeing words (such as adnominal genitives and PPs) follow the head, while agreeing words (including adjectives and 1st or 2nd possessive pronouns) typically precede the head. The syntactic principle states that 3rd person possessive pronouns, in spite of being non-agreeing forms, stand in front of their head nouns. According to Rappaport (1995), the occurrence of pre-head adnominal genitives, such as those in (1b) and (2b), represents the extension of a syntactic principle from pronominal to lexical non-agreeing possessors. This type of extension can be demonstrated by comparison of the following forms: *jego samochód* “his car,” *Pana samochód* (lit. Sir.GEN car) “Your.SG.MSC car,” *Janka samochód* “Janek.GEN car.”

Rozwadowska (1997, 55) suggests that Polish phrases with fronted genitives, e.g., *Marii książka* (lit. Maria.GEN book), result from surface reordering. In contrast, Migdalski (2003, 189) argues that this is regular syntactic movement, due to which the adnominal genitive is attracted to the specifier of DP (where it can check its referential feature). Both Migdalski (2001, 2003) and Rappaport (1995) observe the occurrence of some conditions on genitive preposing, which will be elaborated upon in the next section.

### 3. Restrictions on Genitive Fronting

#### 3.1 Syntactic Complexity

Rappaport (1995, 332) argues that the syntactic complexity of preposed genitives in Polish “is minimal,” and he gives examples of fronted genitives being proper nouns (*Marii książka* “Maria.GEN book”), kinship terms (*wujka dom* “uncle.GEN house”), and name-like designations (*dyrektora samochód* “manager.GEN car”).

Migdalski (2003) concludes that only proper nouns can occur as fronted genitives in Polish, yet he suggests that possessive adjectives as well as fronted genitives are full phrases (rather than heads). The latter suggestion brings desirable results since the data in (4a–b), taken from the National Corpus of Polish (NKJP), as well as example (4c) – invented by me but possible in colloquial spoken Polish – show that fronted genitives can consist of a head N modified by a possessive pronoun, a demonstrative, an adjective, or a PP.

- (4) (a) *mojego męża siostra też miała konflikt serologiczny*  
 my.GEN husband.GEN sister.NOM too had.3SGF conflict.ACC serological  
 “my husband’s sister also had a serological conflict” [NKJP, Usenet]
- (b) *siostry ciotecznej mąż*  
 sister.GEN aunt.ADJ.GEN husband  
 “the husband of (my) female cousin”

- (c) tego sąsiada spod trzynastki córka  
 this.GEN neighbor.GEN from thirteen daughter.NOM  
 “the daughter of this neighbor from (apartment num.) thirteen”

### 3.2 Referentiality and Argumental Status of Genitive DPs

Referentiality is the ability to refer to some particular referent in the external world (or in the mental world of the discourse participant). Migdalski (2003) observes that non-referential adnominal genitives cannot be fronted, as is shown by the following example in (5), which is his example (9b).

- (5) (a) prawa człowieka (b) \*człowieka prawa  
 rights human.GEN human.GEN rights

Referentiality of fronted genitives implies their argumental status, as is demonstrated in Migdalski (2003) and illustrated in (6) below. The preposed genitive in (6a) is the Possessor argument of the relational noun *brat* “brother,” while the one in (6b) is the Agent (or Agent+Theme) argument of the intransitive nominal *przyjazd* “arrival.” In the case of result nominals, which can occur with two adnominal genitives, it is the Possessor (or Actor) genitive which allows fronting (see 6c).

- (6) (a) Hanki brat  
 Hanka.GEN brother
- (b) ojca przyjazd  
 father.GEN arrival
- (c) Marka kolekcja znaczków  
 Marek.GEN collection stamps.GEN

Fronting is not normally attested in the case of internal (Theme/Patient) arguments of event nominals derived from transitive verbs (as in 7b), or the internal argument of result nominals (7c). Exceptions include stylistic reordering of internal Theme/Patient arguments attested in poetry, as in (7d).

- (7) (a) pobicie dzieci przez sąsiada  
 beating.PERF children.GEN by neighbor.ACC  
 “the neighbor’s beating of the children”

- (b) \*dzieci            pobicie            przez   sąsiada  
 children.GEN    beating.PERF    by    neighbor.ACC  
 “the neighbor’s beating of the children”
- (c) \*znaczków    kolekcja    Marka  
 stamps.GEN    collection    Mark.GEN  
 “Mark’s stamp collection”
- (d) Ile            lat    nad    strof            tworzeniem?  
 how-many    years    over    stanzas.GEN    creating  
 How many years (were spent) composing stanzas?”<sup>2</sup>

Agents (external arguments) in transitive nominals are canonically expressed as agentive adjuncts (*przez-PP*), instead of being realized as post-head genitives (see Rozwadowska 1997; Willim 2000). Consequently, they are not expected to occur as preposed genitives, as demonstrated in (8).

- (8) \*sąsiada            pobicie            dzieci  
 neighbor.GEN    beating.PERF    children.GEN  
 “the neighbor’s beating of the children”

Topolińska (1984, 366), quoted in Rappaport (1995, 351), notes the existence of Polish transitive event nominals with the external (Agent) argument being preposed. She provides the example of an event nominal with two genitive DPs (9), or with one genitive DP and an instrumental DP (10):

- (9) I    wtedy    zaczęło    się    to    Jana    codzienne    krytykowanie    Hanki  
 and then    began    r.cl.    this    Jan.GEN    daily    criticism.NOM    Hanka.GEN  
 i    Basi.  
 and    Basia.GEN  
 “And then began Jan’s daily criticism of Hannah and Barbara.”
- (10) to    wieczne    Romka            kiwanie            głową  
 this    constant    Romek.GEN    nodding.NOM    head.INSTR  
 “this constant nodding of his head by Roman”

The acceptability of (9–10) for Topolińska (1984) presumably results from her acceptance of PAs derived from proper nouns, i.e., *Jankowy* and *Romkowy*. Such

<sup>2</sup> Gálczyński Pieśń III. <http://www.kigalczynski.pl/wiersze/piesni.html>.

adjectives are only marginally acceptable for younger speakers of Polish, hence the examples in (11–12) are preceded by two question marks:

- (11) ??Jankowe krytykowanie Hanki i Basi  
 Janek.PA criticising.NOM Hanka.GEN and Basia.GEN  
 “Jan’s criticism of Hannah and Barbara”

- (12) ??Romkowe kiwanie głową  
 Romek.PA nodding.NOM head.INSTR  
 “Roman’s nodding of his head”

Rappaport (2000) argues that noun phrases in the genitive case can be treated as syntactically parallel to possessive pronouns. This case parallelism is visible in coordinated structures, as in (13).

- (13) twój i twojego męża przyjazd  
 your.SG.NOM and your.GEN husband.GEN arrival.NOM  
 “the arrival of you and your husband”

Genitive preposing can be treated as another piece of evidence supporting the parallelism between possessive pronouns, possessive adjectives and adnominal genitives.<sup>3</sup>

### 3.3 Definiteness and Specificity of Fronted DPs

While Migdalski (2001, 2003) rightly observes that fronted DPs need to be referential, it can be additionally noted that they need to be [+definite]. Definiteness is linked with identifiability, which “implies that the speaker signals that the hearer is able to locate a referent for a particular DP” (Alexiadou, Haegeman, and Stavrou 2007, 58). A definite DP denotes a contextually non-ambiguous member of a class of entities that is familiar to both the speaker and the hearer. Not only proper nouns but also kinship terms and professional titles can refer to uniquely identifiable referents. This is illustrated in (14), where the kinship term *babcia* “grandma” and the title *Profesor* “professor” can be used (in the vocative case) as 2nd person polite forms of address.<sup>4</sup> Consequently, such [+definite] nouns can occur as preposed genitives.

3 Rappaport (2000) identifies the category of Possessors (in the broad sense), which include Actors/quasi-Agents in result nominals and Agents in intransitive nominals. The possibility of a prenominal (adjectival) form occurring in the pre-head position is diagnostic of Possessors.

4 Such forms of address are analogous to the honorific 3rd person pronouns *Pan* “Sir; You.SG.MSC” and *Pani* “Lady; You.SG.FEM,” e.g., *Pani Mario, tu są Pani lekarstwa*. (lit. Mrs Maria.voc here are Lady.GEN medications.NOM) “Mary, here are your medications.”

- (14) (a) Babciu, tu są babci lekarstwa.  
 grandma.VOC here are grandma.GEN medications.NOM  
 “Grandma, here are Your medications.”
- (b) Profesorze, dzwoniła Profesora żona.  
 professor.VOC called.SG.F professor.GEN wife.NOM  
 “Professor, Your wife called.”

According to Ihsane and Puskás (2001, 40), while definiteness “selects one object in the class of possible objects,” specificity “relates to pre-established elements in the discourse.” Examples in (15) demonstrate that fronted genitive DPs characteristically denote discourse-linked entities, for instance (*moja*) *żona* “(my) wife”<sup>5</sup> in (15a). The multiple occurrence of genitive preposing in (15b) shows how consecutive entities are activated on the discourse stage, i.e., (someone’s) sister, her husband, and his brothers.

- (15) (a) Nie dawno ożeniłem się i zamieszkałem  
 not long\_ago got\_married.1SG REFL and came\_to\_stay.1SG  
 u żony z teściami. Mieszka tam także  
 at wife.GEN with in-laws live.3SG there also  
 mojej żony brat.  
 my.GEN wife.GEN brother.NOM  
 “Recently I got married and began to live at (my) wife’s place with the in-laws.  
 My wife’s brother is living there as well.” [NKJP, Usenet – pl.sci.psychologia]
- (b) Pracuje u nas siostra, siostry mąż,  
 work.3SG at us sister.NOM sister.GEN husband.NOM  
 tego męża dwaj bracia.  
 this.GEN husband.GEN two brothers.NOM  
 “(Someone’s) sister, the sister’s husband and this husband’s two brothers work here.” [NKJP, Gazeta Wyborcza]

Ihsane and Puskás (2001) and Caruso (2011) argue that entities which are [+specific] and pre-established in the discourse move to the left peripheral position in a split DP, namely to the specifier of Topic Phrase. This proposal is considered for Polish in the next section.

5 The first person possessive pronoun is often omitted in kinship terms.

## 4. The Split DP Hypothesis

Dimitrova-Vulchanova and Giusti (1999), Ihsane and Puskás (2001), Giusti (2005), Aboh et al. (2010), and Caruso (2011), among others, adopt the cartographic approach and the split CP hypothesis put forward in Rizzi (1997). Furthermore, they argue for a split DP. They assume that the structure of noun phrases (similarly to the structure of clauses presented in Rizzi 1997) can be decomposed into three domains: the left periphery, the inflectional domain, and the thematic domain.

- (16) [[Discourse-linked features]...[[Inflectional features]...[[Core predicate and its arguments]]]  
(Aboh et al. 2010, 789)

The thematic domain (i.e., NP shell) is the domain in which thematic roles are assigned and internal or external arguments are merged. The inflectional domain in the case of noun phrases consists of functional projections which host adjectival modifiers (and where inflectional features are checked).

The left periphery deals with discourse-related properties (in clauses or noun phrases). Rizzi (1997) proposes that the left periphery in clauses should be split into the projections listed in (17): ForceP, Topic Phrase, Focus Phrase, and Finiteness Phrase. As suggested in Giusti (2005) and Ihsane and Puskás (2001), the left periphery in noun phrases can be split into the topmost DP, followed by the Topic Phrase, Focus Phrase, and Definiteness Phrase.

- (17) Split CP: ForceP > TopP\* > FocP > TopP\* > FinP (Rizzi 1997)

- (18) Split DP: DP > TopP > FocP > DefP (Ihsane and Puskás 2001)

Giusti (2005) assumes that movement to the nominal left periphery and the clausal left periphery is triggered by the same interpretive features, namely [Topic] and [Focus]. Ihsane and Puskás (2001) take a different view. They suggest that, although the left periphery in the clausal domain is linked with the notions of Topic and Focus, in the nominal domain it should be associated with the features of referentiality, (in)definiteness, specificity, and focus. This position, adopted in Caruso's (2011) analysis of Croatian noun phrases, will be taken here in the discussion of Polish noun phrases.

As suggested in the previous section, preposed adnominal genitives are definite and specific, i.e., pre-established in the discourse. According to Ihsane and Puskás (2001), the feature [+definite] is hosted by the head of DefP, and [+specific] by the head of TopP. Consequently, [+specific] nouns move to the specifier of TopP to check their specificity feature. (As for focalized elements of a noun phrase, the feature [+focus] appears on the head of FocP.)

Elements which move to the spec of TopP in a split DP will be regarded here as topics of the nominal domain. As observed by Jackendoff (2002) for English, quantified expressions cannot occur as topics because they cannot be “independently grounded” (by virtue of requiring a bound variable in the comment part of the sentence).<sup>6</sup> As shown in (19) for Polish noun phrases, adnominal genitives which contain negative quantifiers or universal quantifiers are not felicitous as preposed topicalized DPs. The sentence improves when the fronted DP receives a contrastive stress and is interpreted as constituting a contrastive focus (19c–d).

- (19) (a) ??Żadnej      urzędniczki      spódnica      nie      powinna      sięgać  
no              female\_clerk.GEN      shirt.NOM      not      should      reach  
krócej      niż                      do              kolan.  
shorter      than                      to              knees  
“?As for no female clerk, her skirt should not be shorter than up to the knees.”

- (b) ??Każdej      kobiety      obowiązkiem      jest      urodzić  
every.GEN      woman.GEN      duty.INSTR      is      give\_birth.INF  
pięcioro      dzieci.  
five              children.GEN  
?“As for every woman, her duty is to give birth to five children.”

- (c) ŻADNEJ      urzędniczki      spódnica      nie      powinna      sięgać  
no              female\_clerk.GEN      shirt.NOM      not      should      reach  
krócej      niż                      do              kolan.  
shorter      than                      to              knees  
“The skirt of NO female clerk should be shorter than up to the knees.”

- (d) KAŻDEJ      kobiety      obowiązkiem      jest      urodzić  
every.GEN      woman.GEN      duty.INSTR      is      give\_birth.INF  
pięcioro      dzieci.  
five              children.GEN  
“‘It is the duty of EVERY woman to give birth to five children.’”

In the next section I will support the hypothesis that adnominal genitives move to TopP by examining briefly the location of preposed genitives with respect to other elements of a Polish noun phrase, in particular demonstratives, possessives, and adjectives.

6 Jackendoff (2002), quoted in Ceglowski and Tajsner (2006, 109), offers the following examples:

- (i) \*Every girl, one of the boys danced with.  
(ii) \*As for every girl, one of the boys danced with her.

## 5. The Position of a Preposed Genitive at the Left Periphery

Rappaport (2000) regards Polish genitive preposing as similar to *na*-fronting in Bulgarian. Dimitrova-Vulchanova and Giusti (1999) show that when fronted, the *na*-PP moves to the left margin of the noun phrase. Consequently, it can precede the quantifier and the demonstrative.

- (20) *na* Ivan vsički tezi novi knigi  
*na* Ivan all these new books  
 “all of these new books of Ivan’s” (from Dimitrova-Vulchanova and Giusti 1999)

Such an order would not be felicitous in Polish, where preposed genitives typically follow the demonstrative *ta* “this.FEM,” *ten* “this.MASC,” or *te* “these.NON-VIRILE,” as in (21b).

- (21) (a) ??Janka wszystkie te książki  
 Janek.GEN all these books  
 (b) *te* wszystkie Janka książki  
 these all Janek.GEN books  
 “all of these books of Jan’s”

The preposed genitive can precede an adjectival modifier, especially when the adjective constitutes a contrastive focus. Such a linearization pattern confirms the order of functional projections at the nominal periphery postulated in Giusti (2005) and Ihsane and Puskás (2001). The fronted genitive lands in the specifier of TopP, while the contrastive focus element is in the lower projection, in spec of FocP.

- (22) (a) *ten* Hanki KOLEJNY narzeczony  
 this.MSC Hanka.GEN next fiancé.MSC  
 “Hannah’s next fiancé”  
 (b) *To* był Marii POPRZEDNI mąż, a nie obecny.  
 it was Mary.GEN former husband.NOM and not current  
 “It was Mary’s FORMER husband, and not the current one.”

Occasionally a demonstrative can follow the preposed genitive DP. This happens, for instance, when the adnominal genitive is the AS (Aboutness-Shifted)<sup>7</sup> topic (as

<sup>7</sup> As stated in Frascarelli and Ramaglia (2013, 6), the AS Topic connects “*aboutness* (=sentence

in 23, cf. Frascarelli and Hinterhölztz 2007 on topic typology), or when the fronted genitive precedes a demonstrative and a focused element (24):

(23) (a) a Basi ten obecny mąż  
 and Basia.GEN this current husband.NOM  
 “And as for Barbara, her current husband”

(b) a Marka ta nowa szefowa  
 and Marek.GEN this new boss  
 “and as for Mark, his new female boss”

(24) (a) Marka ta NAJSTARSZA córka (wyszła za Hiszpana)  
 Marek.GEN this.FNOM oldest daughter.NOM (married Spaniard)  
 “This ELDEST daughter of Mark married a Spaniard.”

(b) Profesora ta DRUGA żona  
 Professor.GEN this second wife.NOM  
 “the SECOND wife of the Professor”

The additional evidence for positing DP-internal Topic Phrase or Focus Phrase will be adduced in Section 6.

## 6. Other Topicalized or Focalized Elements in the Noun Phrase

Once the split DP hypothesis is adopted for Polish, the specifier of TopP can host not only preposed genitives but also other elements of a noun phrase which move to the left periphery for greater prominence.

Ihsane and Puskás (2001) and Veselovská (2013) suggest the following (unmarked) universal order of modifiers<sup>8</sup> within the noun phrase:

- (25) Universal base order
- (a) Demonstrative > Numeral > Adjective > Noun (Ihsane and Puskás [2001, 45])
- (b) Q > D > Poss > Num (Veselovská 2013)

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Topic) with the property of being *newly introduced or reintroduced and changed to* (= shift).” The two other types of topics are Contrastive Topics and Given Topics.

8 Veselovská (2013) regards Q > Dem as the universally unmarked order, as is demonstrated by the English sequence *all the four boys* and its Czech equivalent *všichni ti čtyři chlapci*. However, the unmarked word order in Polish seems to be Dem > Q (cf. Rutkowski 2009, 65).

This base order is illustrated by the German noun phrase *diese fünf grossen Häuser*, its English equivalent *these five large houses*, or the Czech phrase *taková skvělá žena* “such an excellent woman” and its Polish equivalent *taka wspaniała kobieta*.

The occurrence of marked orders within Polish noun phrases can be interpreted as evidence for the nominal left periphery (as argued for Hungarian, Romanian, and Croatian by Ihsane and Puskas 2001, Giusti 2005, and Caruso 2011). The element which is located closer to the left edge of a noun phrase than is predicted by the unmarked order can be treated as one that has moved to Spec, TopP or Spec, FocP (depending on whether it shows contrastive pitch accent or not).

The postnominal occurrence of the demonstrative, exemplified in (26), has an anaphoric interpretation since it marks the preceding noun as discourse-linked,<sup>9</sup> e.g., mentioned in the previous sentence (see Topolińska 1984, 345–352, 384–386). The phrase *człowiek ten* (lit. man this.SG.MSC) in (26a) refers to *Max*, mentioned in the immediately preceding sentence, while *bogini ta* (lit. goddess this.SG.F) in (26b) is coreferential with *helleńska Atena* “Hellenic Athena.” The post-head placement of the demonstrative can be analysed as resulting from the noun checking its [+specific] feature in the left periphery.

- (26) (a) Wreszcie      przypomniał      sobie      i      o      Maksie.  
 at\_last      remembered.3SG      REFL      and      about      Max.LOC  
 Doprawdy, **człowiek**      **ten**      wydawał      mu      się  
 indeed      man      this      seemed      him.DAT      REFL  
 jeszcze      wstrętniejszy      niż      Fornalski.      [NKJP, fiction]  
 even      more\_obnoxious      than      Fornalski

“At last he remembered about Max as well. Indeed, this man seemed to him to be even more obnoxious than Fornalski.”

- (b) dlaczego      **helleńska**      **Atena**      nosi      u      Rzymian  
 why      Hellenic      Athena      bear.3SG      at      Romans.GEN  
 imię      Minerwy.      Otóż      bogini      ta      zrodziła  
 name.ACC      Minerva.GEN      so      goddess.NOM      this      was\_born  
 się      w      głowie      Zeusa-Jowisza.      [NKJP, Dziennik Polski]  
 REFL      in      head.LOC      ZEUS.GEN\_JOVE.GEN

“Why does Hellenic Athena bear the name of Minerva among the Romans? Well, the goddess was born inside the head of Zeus- Jove.”

9 There is also a stylistic value of this marked word order (N+Dem) in Polish, since it is characteristic of literary language.

The sequence Adj(ective) > Dem(onstrative), occurring in (27), is another example of the marked word order, in which the adjective is prominent without bearing pitch accent.

(27) (a) Okrutny ten Tata to ja.  
 cruel this daddy TOP me  
 "I am this cruel daddy."<sup>10</sup>

(b) **potężna** ta bogini jest też czczona  
 powerful this goddess is also worshipped  
 w greckiej kulturze jako patronka mądrości  
 in Greek culture as patroness wisdom.GEN  
 "This powerful goddess is also worshipped in Greek culture as a patroness of wisdom." [NKJP, fiction]

The fronted adjective in (27a, 27b) can be regarded as occupying Spec, TopP. It conveys familiar information, which forms a part of the Common Ground (cf. Frascarelli and Ramaglia 2013). For instance, it is commonly known that Athena is powerful as a goddess, thus the adjective *potężna* "powerful" in (27b) is preposed.

With respect to noun phrases containing both possessives and various qualifying adjectives, the unmarked order is Poss > Adj, as in (28), while (29) illustrates the marked order Adj > Poss.

(28) (a) moja najdroższa torebka  
 my most\_expensive handbag

(b) twoja najładniejsza córka  
 your prettiest daughter

(c) jego najnowsza książka  
 his newest book

(29) (a) najdroższa moja torebka  
 most\_expensive my handbag

(b) najładniejsza twoja córka  
 prettiest your daughter

<sup>10</sup> <http://www.facebook.com/OtoKoto.dladzieci/posts/177295175752820>.

- (c) najnowsza            jego    książka  
newest                    his     book

The difference between (28) and (29) can be stated in terms of scope, with the superlative adjective *najdroższa* “the most expensive” taking scope over the possessive *moja* “my” in (29a), i.e., “the most expensive of my handbags” (cf. Willim 1999, 2000, Rutkowski 2009). However, the marked word order also requires greater emphasis to be placed on the adjective. This can be interpreted as involving the movement of the emphatic adjective *najdroższa* to the nominal left periphery.

A similar situation obtains in the case of the relative ordering of possessives and numerals. While the order Poss > Num is unmarked, one can come across noun phrases with the marked sequence Num > Poss (30b).

- (30) (a) moja            pierwsza    wycieczka    zagraniczna  
my                first            trip            foreign  
“my first trip abroad”
- (b) pierwsza    moja            wycieczka    zagraniczna  
first            my            trip            foreign  
“the first of my trips abroad”

There is a difference in meaning between (30a) and (30b), since only the second phrase carries the information that the speaker has been on several trips abroad (cf. Willim 1999 for the comparison of *moje dwie siostry* “my two sisters” and *dwie moje siostry* “two of my sisters”). Moreover, the numeral which precedes the possessive, as in (31b), can be used contrastively.

- (31) (a) To            jest            moja    pierwsza            wycieczka    zagraniczna.  
This    is            my    first            trip            foreign  
Nigdy    dotąd    nie    wyjeżdżałam    z            Polski.  
never    so\_far    not    left.1SG            from            Poland  
“This is my first trip abroad. I have never left Poland so far.”
- (b) Tylko    PIERWSZA    moja    wycieczka    zagraniczna    była    udana.  
only    first            my    trip            foreign            was    successful  
“Only the FIRST of my trips abroad was a success.”

Ihsane and Puskás (2001) mention in passing the occurrence of numerals which move to DP-internal Spec, FocP to check their [+focus] feature. Such an analysis is plausible for (31b) since the numeral is focalized. Alternatively, if the phrase with

the fronted numeral is interpreted as denoting an AS-topic, it would be more appropriate to place it in Spec, TopP instead. This could be postulated for the noun phrase given in (32).

- (32) A    druga    moja    wycieczka    zakończyła    się    katastrofą.  
       and second my    trip                    ended                    REFL disaster.INSTR  
       ‘‘And as for the second of my trips, it ended in a disaster.’’

## 7. Conclusions

The present chapter considered evidence in support of the claim that some cases of word order variation within Polish noun phrases result from different information packaging. It was argued that one can account for marked word orders by adopting a split DP (following Ihsane and Puskás 2001, Giusti 2005, Aboh et al. 2010, and Caruso 2011, among others), and by assuming that emphasized constituents of DPs move to dedicated functional projections at the nominal left periphery.

It was pointed out that fronted genitives are not only referential and definite, but also discourse active (i.e., pre-established in the discourse). Thus, they are regarded here as topics which move to the DP-internal Topic Phrase. Additionally, it was stated that fronted genitives in Polish DPs are not syntactically minimal (although many of them are proper names).

It was shown that preposed genitives can precede focused elements within a noun phrase (e.g., when the attributive adjective or the head noun bears a contrastive focus). It was demonstrated that there exists additional evidence for recognizing a split (layered) DP in Polish. The occurrence of some other unexpected orders within a noun phrase can be explained by the movement of a particular constituent (such as a qualifying adjective or a numeral) into a DP-internal TopP projection, or FocP projection.

# Chapter Ten

Manuela Gonzaga

## Nominal Syntactic Structure, Interpretation, and Left Periphery

### 1. Introduction

This chapter aims to discuss the different positions adjectives may occupy inside DP/NP in European Portuguese (EP) and relate them to the distinct readings obtained. Moreover I will argue that some ambiguities presented by adjectives in English, as discussed in Larson (1995), result from different positions occupied by the adjective. I will present data where distinct orders in EP exhibit distinct readings, corresponding to the ones suggested by Larson (1995) for English.

Having noticed that some adjectives occur with deverbal nouns and are interpreted as arguments of the nominalized verb, one can wonder whether possessives also act the same way, namely being understood as one of the deverbal nouns' arguments.

Thus I will also analyze data from possessives in European Portuguese (henceforth EP) and propose that their morphology and order inside DP/NP are evidence in favor of a functional projection connected to the speaker.

Finally, supported by relevant data and analysis made by traditional grammarians, I will argue that possessives are or behave like adjectives. As it is possible in EP for possessives and adjectives to occur both in pre- and post-nominal positions, I try to figure out the reason why possessives occur predominantly in prenominal position, contrary to adjectives that occur mostly in post-nominal position.

### 2. Data from Adjectives in EP

To my knowledge, all authors agree that in Romance languages (as in EP) adjectives can appear both in prenominal and in post-nominal positions (e.g., *Cinque*

1994, 2010; Bernstein 1993; Bosque and Picallo 1996; Demonte 1997, 1999, 2001; Alexiadou, Haegeman, and Stavrou 2007).

- (1) (a) as meninas **bonitas** “the girls beautiful”  
 (b) as **bonitas** meninas “the beautiful girls”

However, there are some types that can only occur in post-nominal position:

- (2) (a) as flores **campestres** “the flowers country”  
 (b) \*as **campestres** flores “the country flowers”

Others can only occur in pre-nominal position:

- (3) (a) o **suposto** criminoso “the supposed criminal”  
 (b) \*o criminoso **suposto** “the criminal supposed”  
 (c) o **mero** esboço “the mere sketch”  
 (d) \*o esboço **mero** “the sketch mere”

## 2.1 Adjectives Only in Post-nominal Position

Adjectives occurring only in post-nominal position, generally speaking, modify the denotation of the noun. These adjectives have a very direct relation with the head noun, usually delimiting subsets in the extension denoted by it.

- (4) (a) o carro **presidencial** “the car presidential”  
 \*o **presidencial** carro “the presidential car”  
 (b) o carro **alemão** “the car German”  
 \*o **alemão** carro “the German car”  
 (c) o carro **azul** “the car blue”  
 \*o **azul** carro “the blue car”  
 (d) a ocupação **militar** “the occupation military”  
 \*a **militar** ocupação “the military occupation”

- (e) a ocupação **árabe**            “the occupation Arabian”  
 \*a **árabe** ocupação            “the Arabian occupation”

Thus, adjectives occurring in post-nominal position may realize a thematic role of the noun (e.g., Giorgi and Longobardi 1991; Bosque and Picallo 1996; Demonte 1999), or they may realize a semantic function of the noun without any semantic role (Bosque and Picallo 1996), or just qualify the noun.<sup>1</sup>

Lorenzo (1995) and Demonte (1999) call these adjectives *intersective* because the resulting projection (comprising the adjective and the noun expression) delimits a set of entities that belong to two different sets at the same time. For example, in (4a) we are talking about a car that belongs to the set of cars, and to the set of belongings of the President; in (4d) we are talking about a military occupation and not a civil one. On the contrary, in (4b) we are referring to a car that was built by a German company, and in (4e) we are referring to the occupation of the Arabian.

In (4c) we are just considering the color of the car, which makes the adjective part of different class and not of the “intersective” adjectives group, in Lorenzo’s (1995) terms.

## 2.2 Adjectives Only in Prenominal Position

Contrary to the previous group, adjectives of this class occur in prenominal position changing the intension denoted by the head noun.

Adjectives characterized by occurring only in prenominal position are few. The more current examples are the adjectives *suposto* (“supposed”) and *mero* (“mere”):

- (5) (a) o **suposto** criminoso        “the supposed criminal”  
       (b) \*o criminoso **suposto**        “the criminal supposed”
- (6) (a) uma **mera** flor                “a mere flower”  
       (b) \*uma flor **mera**                “a flower mere”

The fact that these adjectives are only a few may be, by itself, evidence favoring the idea that they are not exactly lexical items like nouns, adjectives, and verbs are, but hypothetically they are functional lexical heads.

<sup>1</sup> See also Grimshaw (1990) for the same distinction in the context of deverbal nouns and Demonte (1999) for a more detailed proposal about these meanings in Spanish.

### 2.3 Adjectives in Prenominal and Post-nominal Positions

Some adjectives may occur either in pre- or post-nominal positions but they have a slight change in meaning from one position to the other. When the adjective occurs in post-nominal position it changes the reference of the noun, restricting or qualifying it (Demonte 1999), but when it occurs in prenominal position the connotation appears to be changed according to the opinion of the speaker. This means that the characterization that the adjective in prenominal position gives to the noun is not a true change in its denotation, but only a different point of view of the speaker.

- (7) (a) a casa **grande** do João está pronta      “the house big of J. is finished”  
 (b) a **grande** casa do João está pronta      “the big house of J. is finished”

(7a) means that J. was building a house with a big size, and that the construction is finished. On the contrary, (7b) means that J. was building a house, whose construction is finished, but it is not necessarily the case that the house is big in size. The speaker may say *a grande casa* because J. announced he was going to build a big house, meaning a special one, or the one he was dreaming about for a long time. However, the opinion the speaker is giving has always to do with some internal property or properties of the noun (*casa* “house”).

Besides this type, other adjectives may occur in pre- or post-nominal position but without characterizing an internal property of the head noun.

- (7) (c) o **extraordinário** carro **azul**      “the extraordinary car blue”  
 (d) o carro **azul extraordinário**      “the car blue extraordinary”

In this example the noun has a property of being *azul* (“blue”), although not of being *extraordinário* (“extraordinary”). This means that, contrary to the previous examples, *extraordinário* may occur either in pre- or post-nominal position, but it never refers to a real property of the noun (an internal/lexical/denotative property); instead it gives a pure subjective opinion of the speaker. We can confirm the fact of the car being blue (by comparing it with a color palette), but there is no way to conclude that the car is also extraordinary.

Apart from adjectives like *extraordinário*, which always conveys an evaluation, there are also adjectives like *único* (“unique, single”) and the ordinals, e.g., *primeiro*, *segundo* (“first, second” etc.), which occur more often in prenominal position than in post-nominal position. Nonetheless, when in post-nominal position the reading conveyed is quite different.

- (8) (a) O primeiro suspeito apresentou um álibi.  
 “The first suspect presented an alibi.”
- (b) \*O suspeito primeiro apresentou um álibi.<sup>2</sup>  
 “The suspect first presented an alibi.”
- (9) (a) O primeiro livro apresenta as personagens  
 “The first book introduces the characters.”
- (b) O livro primeiro apresenta as personagens.<sup>3</sup>  
 “The book number-one introduces the characters.”
- (10) (a) O único livro à venda estava reservado  
 “The unique book for sale was reserved.”
- (b) \*O livro único à venda estava reservado.<sup>4</sup>  
 “The book unique for sale was reserved.”

We may also look at adjectives occurring with deverbal nouns, where they may be interpreted as one of the arguments of the thematic structure.<sup>5</sup>

- (11) (a) Os romanos ocuparam a Península Ibérica.  
 “The Romans occupied the Peninsula Iberian.”

2 In this context the adjective *primeiro* (“first”) is possible if we consider an adverbial usage/reading.

- (i) o suspeito primeiro apresentou um álibi, depois assumiu-se culpado.  
 “The suspect first presented an alibi, then he assumed his was guilt.”

If we substitute the noun in the subject position with a feminine one, it will be evident that in one case we have an adjective (agreeing with the head noun) and in the other we have an adverb showing no agreement.

- (ii) \*/? **a** suspeita primeira apresentou um álibi = a primeira suspeita apresentou um álibi  
 → “the first suspect”
- (iii) **a** suspeita primeiro apresentou um álibi, depois assumiu-se culpada.

3 In this example there is also an adverbial reading, as observed in the previous note. This is an instance of linear order hiding different structures, one using an adjective and the other an adverb.

4 This pair of examples may, apparently, constitute a problem if we assume that *único* behaves like *primeiro* (with an ambiguous interpretation, which it doesn’t have). These data instead show the distinctive behavior of *único*.

5 I assume with Grimshaw (1990) that deverbal nouns inherit their theta grid from the corresponding verb.

- (b) a ocupação da Península Ibérica pelos romanos  
the occupation of-the Peninsula Iberian by-the Romans
- (c) a ocupação romana da Península Ibérica  
the occupation Roman of-the Peninsula Iberian
- (d) a sua ocupação pelos romanos  
the his occupation by-the Romans

After analyzing these data it can be noted, on the one hand, that the occurrence of thematic adjectives depends on the argument it may represent (apparently, only agents/subjects) and, on the other hand, that possessives may also be interpreted as arguments of the noun.

This observation leads us to widen the research field in order to include possessives.

### 3. Possessives

Being aware of the fact that possessives pose some more complex questions than the ones treated in this chapter, I will restrict myself to a description of some morphosyntactic properties of these items that motivate the main idea of the proposal.

#### 3.1 Paradigm of Possessives in (Colloquial) EP

| Person                       | Masc. Singular | Fem. Singular | Masc. Plural | Fem. Plural |
|------------------------------|----------------|---------------|--------------|-------------|
| Speaker singular (1st)       | Meu            | Minha         | Meus         | Minhas      |
| Addressee singular [-formal] | Teu            | Tua           | Teus         | Tuas        |
| Addressee singular [+formal] | <b>Seu</b>     | <b>Sua</b>    | <b>Seus</b>  | <b>Suas</b> |
| 3rd singular                 | <b>Seu</b>     | <b>Sua</b>    | <b>Seus</b>  | <b>Suas</b> |
| Speaker plural (1st)         | Nosso          | Nossa         | Nossos       | Nossas      |
| Addressee plural (2nd)       | Vosso          | Vossa         | Vossos       | Vossas      |
| 3rd plural                   | <b>Seu</b>     | <b>Sua</b>    | <b>Seus</b>  | <b>Suas</b> |

**Table 1.** Possessives in EP (adapted from Castro 2006).

Possessives in EP are very regular as far as agreement with the possessed object and the speaker are concerned. Thus on the left side column of the table there is the indication of the grammatical person or if it applies to the speaker, to the addressee or to a third person out of the conversational scenario.

In the other four columns of the table there are distinct forms for masculine and feminine singular and also for masculine and feminine plural.

The underlined forms, corresponding to the singular persons (1st, 2nd and 3rd), have an additional characteristic which consists of also being used for the second person, the one the speaker is talking to. In EP this third form is used when the speaker treats with deference the person he/she is talking to. In Brazilian Portuguese (BP) the 3rd person singular form is regularly used to refer the person the speaker is talking to.

As far as the (double underlined) plural 3rd person is concerned and considering what was just said about the deferent use of the 3rd person singular, sometimes the use of the possessive form makes the conversation ambiguous between an interpretation in which the speaker is treating his interlocutor with deference or is referring to someone out of the conversation, a true third person.

### 3.2 Morpho-syntactic Properties of Possessives in EP

Possessives in Romance languages ordinarily agree in gender and number with the head noun. In Portuguese this is also the case, as it has overt agreement features for gender (masculine and feminine) and number (singular and plural) in all forms.

Possessives obligatory agree in gender and number with the possessee/possessum (masculine/feminine, singular/plural):

|                                                          |                       |
|----------------------------------------------------------|-----------------------|
| a casa → a <u>tua</u> casa                               | (-a feminine ending)  |
| <u>as</u> casas → <u>as</u> <u>nossas</u> <u>casas</u>   | (-s plural ending)    |
| o carro → o <u>teu</u> carro                             | (-o masculine ending) |
| <u>os</u> carros → <u>os</u> <u>nossos</u> <u>carros</u> | (-s plural ending)    |

**Table 2.** *Agreement morphology in nouns and possessives.*

Possessives obligatorily agree in person and number with the speaker or the hearer/addressee or a third person, possibly the only person present at the discourse:

|                                                 |                                  |
|-------------------------------------------------|----------------------------------|
| a <b>minha</b> casa, as <b>minhas</b> casas     | 1st person singular              |
| o <b>meu</b> carro, os <b>meus</b> carros       |                                  |
| a <b>tua</b> casa, as <b>tuas</b> casas         | 2nd person singular              |
| o <b>teu</b> carro, os <b>teus</b> carros       |                                  |
| a <b>nossa</b> casa, o <b>nosso</b> carro       | 1st person plural                |
| as <b>nossas</b> casas, os <b>nossos</b> carros |                                  |
| a <b>vossa</b> casa, o <b>vosso</b> carro       | 2nd person plural                |
| as <b>vossas</b> casas, os <b>vossos</b> carros |                                  |
| a <b>sua</b> casa, as <b>suas</b> casas         | 3rd person (singular and plural) |
| o <b>seu</b> carro, os <b>seus</b> carros       |                                  |

**Table 3.** *Agreement morphology on possessives.*

In EP, possessives are always preceded by an article/determiner in declarative sentences.<sup>6</sup>

### 3.3 Word Order of Pronominal Possessives in the DP/NP

Possessives occur either in pre- or in post-nominal position in EP, but the choice between both word orders is not free.

(12) EP/\*BP

- |                                       |                                                                                               |
|---------------------------------------|-----------------------------------------------------------------------------------------------|
| (a) O <u>meu</u> livro                | the <sub>MASC-SING</sub> my <sub>1SG-MASC-SING</sub> book <sub>MASC-SING</sub>                |
| (a') *O livro <u>meu</u> <sup>7</sup> | the <sub>MASC-SING</sub> book <sub>MASC-SING</sub> my <sub>1SG-MASC-SING</sub>                |
| (a'') <u>Meu</u> livro                | *EP/BP my <sub>1SG-MASC-SING</sub> book <sub>MASC-SING</sub>                                  |
| (b) Um livro <u>meu</u>               | a <sub>MASC-SING</sub> book <sub>MASC-SING</sub> my <sub>1SG-MASC-SING</sub> “a book of mine” |
| (b') */??Um <u>meu</u> livro          | a <sub>MASC-SING</sub> my <sub>1SG-MASC-SING</sub> book <sub>MASC-SING</sub>                  |
| (c) Este livro <u>meu</u>             | this <sub>MASC-SING</sub> book <sub>MASC-SING</sub> my <sub>1SG-MASC-SING</sub>               |
| (c') Este <u>meu</u> livro            | this <sub>MASC-SING</sub> my <sub>1SG-MASC-SING</sub> book <sub>MASC-SING</sub>               |

As (12) shows, in EP, with a definite article (a) the possessive always occurs in prenominal position, but with the indefinite article (b) and (b') the possessive always occurs in post-nominal position. As far as demonstratives are concerned, their co-occurrence with possessives (c) and (c') may happen either in pre- or in post-nominal position though the prenominal position is more natural. In post-nominal position some focus intonation or meaning is necessary for the order to be possible. This strategy is only available with demonstratives.<sup>7</sup>

6 There are some specific contexts in which DPs with a possessive have to occur with no article. In these cases a different intonation is needed, either expressing joy or sorrow.

- (i) Meu Deus! (My God)
- (ii) Meu amor! (My love)
- (iii) Minha mãe! (My mother)

7 It has been proposed that the possibility of the post-nominal position for the possessive only occurs with demonstratives because these are the only determiners connected to the speaker. In fact, demonstratives in EP show a tripartite division corresponding to the three persons of discourse: 1st (este, esta, estes, estas), 2nd (esse, essa, esses, essas), and 3rd (aquele, aquela, aqueles, aquelas).

- (13) (a) \*O seu livro<sup>8</sup> OK if *seu* denotes a formal addressee  
the 3sg-POSS-MASC book
- (b) \*Um livro seu OK if *seu* denotes a formal addressee  
a book 3sg-POSS-MASC
- (c) \*Este livro seu OK if *seu* denotes a formal addressee  
this book 3sg-POSS-MASC
- (c') \*Este seu livro OK if *seu* denotes a formal addressee  
this 3sg-POSS-MASC book

An intriguing behavior with possessives is the impossibility that the item refers to a true third person (someone different/distant from speaker and hearer). As (13) shows, no matter the determiner and the position it occurs with the third person possessive, the result will always be ungrammatical, unless we use the 3rd person forms to refer a formal addressee.

- (14) (a) O livro dele/dela the book of-he/she<sub>NOM</sub>
- (b) Um livro dele/dela a book of-he/she<sub>NOM</sub>
- (c) Este livro dele/dela this book of-he/she<sub>NOM</sub>
- (d) \*Este dele/dela livro this of-he/she<sub>NOM</sub> book

Besides possessive elements, there is an alternative strategy in EP to transmit the possession meaning. As (14) shows, the second strategy uses a preposition clustered with the nominative personal pronoun, always in a post-nominal position (cf. c vs. d).

- (15) (a) O João deu-me a sua foto. The João gave-me<sub>ACC</sub> the his<sub>3RD-POSS-FEM</sub> foto
- (b) O João deu-me a foto dele. The João gave-me<sub>ACC</sub> the foto of-he<sub>NOM</sub>

8 In some regions of Portugal, namely the Azores Islands, older people still use this 3rd person possessive to refer to a possession relation of someone out of the conversation. However, this is already understood as an archaism and will probably disappear in the next decades.

As (15) shows, possessive elements (*sua*) and the overt preposition with personal pronoun (*dele*) seem to be in complementary distribution. Although the meaning of both is the same, there are differences that are probably connected to the position occupied by the possessive element/set. Thus, with the possessive element there are always morphological features corresponding to the speaker and to the object possessed. With the prepositional phrase information about the possessor is only given by the nominative personal pronoun.

The last intriguing fact, as far as possessives are concerned, has to do with the impossibility of the prepositional phrase occurring with oblique and nominative forms of first (and second) person personal pronouns, as we can see in (16) with the first person (*mim/eu*).

- (16) (a) \*O livro de mim/de eu      the book of me<sub>DAT</sub>/of I<sub>NOM</sub>  
 (b) \*Um livro de mim/de eu      a book of me<sub>DAT</sub>/of I<sub>NOM</sub>  
 (c) \*Este livro de mim/de eu      this book of me<sub>DAT</sub>/of I<sub>NOM</sub>

## 4. Questions

Considering all the evidence presented, some questions arise that it is imperative to answer. As far as adjectives and possessives are concerned, what dictates the word order inside DP/NP? What triggers the apparent optional occurrence of adjectives in pre- and post-nominal position in EP? Besides agreement with the head noun and the possibility of occurring as arguments of deverbal nouns, adjectives may also occur in pre- and post-nominal position in EP. Why? Where are possessives and adjectives merged in the DP/NP? Why do languages (of the same family) exhibit different patterns of possessive and adjectival orders in DP/NP?

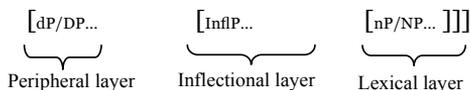
## 5. Sketch of a Proposal

### 5.1 Assumptions

With traditional grammarians we assume that possessives and adjectives belong to the same word class.

Authors working on DP/NP have argued that nominal structure has three layers, parallel to the ones advocated for clause structure. With Cornilescu (1993), Zamparelli (1995), Cinque (1999), Giusti (2005), Aboh et al. (2010), and Corver (2013), I assume there is:

- (i) a **lexical or core layer** in the DP, where lexical items are merged, namely arguments of the noun and adjectives restricting the nominal denotation (relational and qualifying, cf. Demonte 1999);
- (ii) an **inflectional layer** where nouns and modifiers share/match morphological properties;
- (iii) a **complementation or peripheral layer**, occupied by determiners, where discourse features are syntactically checked.



The occurrence of possessives and adjectives either in pre- or post-nominal position exhibits differences in meaning (cf. Gonzaga 2004, 2006, 2013); in prenominal position some relation with the discourse context is conveyed.

In EP, adjectives occur in prenominal position when some information from the discourse context is encoded in the meaning conveyed.

The preferred word order for possessives is in prenominal position. My proposal is that this order is preferred due to the overt morphological features of agreement between possessives and the discourse persons.

Adjectives and possessives share some property that allows them to display the meaning of argument roles in the context of deverbal nouns.

Inspired by Cinque (1999, 2010), I assume there is a hierarchy managing the merge of different types of adjectives, either in nP/NP or in the inflectional layer.

## 5.2 Adjectives and Possessives Merged in the Lexical Layer

In the light of Larson's (1988, 1991) proposal to split VP to accommodate verb arguments, I argue that relational and qualifying adjectives (as labeled by Demonte 1999), as well as possessives acting as arguments of the head noun, are necessarily merged inside the nP/NP.

The idea that only arguments may be merged inside the nP/NP (having in mind the proposals by Larson 1988) seems to me too reductive because most nouns don't select arguments. Nonetheless, the denotation the NP brings to the derivation depends not only on the intrinsic lexical meaning of the head but also on the meanings brought by the items closely connected to it, like adjectives. Thus, assuming that those elements are merged in the nP/NP contributes to support or justify the lexical layer, but from another perspective, we may also consider the nP/NP as a kind of a "meaning shell" that may be taken as a whole and modified.

This, I argue, is observed with nouns of function or profession:

- (17) (a) O    médico    bom        que        visitei        é    francês.  
           the    doctor    good        that        visited<sub>1SG-PAST</sub>    is    French
- (b) O    bom        médico    que        visitei        é    francês.  
           the    good        doctor    that        visited<sub>1SG-PAST</sub>    is    French

(18) Olga is a beautiful dancer.<sup>9</sup>

In EP, the meaning of (17a) and (17b) differs only in the perspective over the nP/NP.

While in (17a) the head noun *médico* is “directly” modified by the adjective, as in any modification context, in (17b) the whole nominal expression to the right of the adjective is taken and modified. Thus in (17b) we get an interpretation in which the noun *médico* is modified not as an individual, but rather as an individual with a particular function.

If we think about Larson’s example, we can now conclude that the two meanings obtained with the same linear order in English correspond to two different orders in EP: one prenominal and the other post-nominal.

Besides this particular context of adjectives-nouns of function, there are other situations in which adjectives end up in a prenominal position, even though they have been merged inside the nP/NP.

In (7), here repeated as (19), the difference between the pre- and post-nominal position of the adjectives is the consequence of a movement of *grande* to a focus position in the periphery. Then, if we accept (19a) as a normal declarative sentence, (19b) requires focus in order for the sentence to be grammatical.

- (19) (a) a casa grande do João está pronta        “the house big of J. is finished”
- (b) a grande casa do João está pronta        “the big house of J. is finished”

As far as possessives are concerned, the morphology they exhibit was the main motivation for the idea that there is a functional projection in the periphery (between dP and DP), in which possessives end up checking agreement features of the speaker/discourse person. This idea, at first labeled  $\gamma$ P, was baptized as Discursive\_PersonP by Gonzaga (2006, inspired by EvaluativeP as proposed by Ambar 1999, and SpeakerP as proposed by Speas and Tenny 2003).

Moreover, assuming the merge of possessive expressions in the nP/NP has the advantage of providing a uniform account of pronominal and non-pronominal possessives (*dele, do professor, do João, etc.*).

<sup>9</sup> Example from Larson (1995).

### 5.3 Adjectives Merged in the Inflectional Layer

Although I assume, with Cinque (2010), a hierarchy on the merge of adjectives, I argue instead that only some types of adjectives are merged in the inflectional layer, namely the ones corresponding to Demonte's adverbials (intensional and eventive or circumstantial). These classes are merged in functional projections through which the head noun moves to check inflectional features.

Assuming, as I do in this chapter, that adverbial adjectives are merged in the inflectional layer while qualifying and relational adjectives are merged in nP/NP, because of examples like (17) we need to assume that sometimes adjectives leave the "meaning shell" and are merged in the inflectional area because there is a specific feature probing for it. Although there is no structured proposal for this, it seems very plausible that there is something like an event projection/feature in the inflectional layer. Its function is crucial in the context of some deverbal nouns, distinguishing different aspectual types of nominals (cf. e.g., Grimshaw 1990; Brito and Oliveira 1995; Ambar et al. 2002).

## 6. Conclusions

The two main ideas I have defended here are that, first, EP has morphosyntactic and word order patterns (with adjectives as well as with possessives) and meanings suggesting that the noun's modifiers are merged either in nP/NP or in InflP, depending on the semantic type of the modifier; and second, that possessives constitute an argument in favor of the existence of an agreement projection in the DP layer, where possessives go, and where the information of the speaker-hearer is conveyed.

# Chapter Eleven

Petra Mišmaš

## An Argument for *Wh*-fronting in the Slovenian DP

### 1. The Problem

Several authors have claimed that there is a parallelism between clausal structure and the structure of either the NP or the DP. For example, Abney (1987) claimed that English DPs and IPs are parallel, Szabolcsi (1994) proposed that there is a parallelism between the structures of CPs and DPs, which involves inflection, possessor extraction, and articles as complementizers, and Giusti (1996) shows that DPs have a fine structure with a focus and topic projection (again similar to the clause in Rizzi 1997). Ntelitheos (2002) extends the DP in Greek even further and proposes that a DP can have projections typical of CP (TopP, FocP, and DefP), IP (AgrP, NumP), and the lexical domain (as in VP). Finally, the parallel has also been established with respect to phases. According to this view, as in Bošković (2008b), which is based on Chomsky (2000), CP is a phase but IP is not, and DP is a phase while NP is not.

These parallels suggest that there is a possibility of having the same types of operations available in both DPs and CPs/IPs. Specifically, if a language has *wh*-fronting on a CP or IP level, then it might also be expected that it would be possible to have *wh*-fronting in a DP. Or, if we drive this intuition even further, we could expect that a multiple *wh*-fronting language can have multiple *wh*-fronting not only in a clause, but also in DP. I will however show that the latter is not the case for Slovenian, but that evidence exists for single fronting in the Slovenian DP.

### 2. Slovenian as a Multiple *Wh*-fronting Language

If we want to illustrate the parallel between sentential and nominal phrases with respect to *wh*-fronting, we must first show that (multiple) *wh*-fronting is possible in the language under study.

Slovenian, as shown below, is a multiple *wh*-fronting language.<sup>1</sup> This means that all *wh*-phrases move to the beginning of the clause. Example (1) shows that when a single *wh*-phrase is present in the clause it undergoes *wh*-fronting in Slovenian. (2) shows that multiple *wh*-phrases all move and that they move in any word order possible. While this holds for both *wh*-pronouns and D(iscourse)-linked phrases, I only show multiple *wh*-fronting with simple *wh*-phrases (*wh*-pronouns).

- (1) Koga Maja sovraži?  
 whom.ACC Maja.NOM hates  
 “Who does Maja hate?”
- (2) (a) Kdo je koga kam povabil?  
 who.NOM AUX who.ACC where invite  
 “Who invited whom where?”
- (b) Kdo je kam koga povabil?
- (c) Kam je kdo koga / koga kdo povabil?
- (d) Koga je kdo kam / kam kdo povabil?

Mišmaš (forthcoming), following work on *wh*-fronting by Bošković (1994, 1997, 2001a, 2002), Stepanov (1998), and Stjepanović (2003), has revised the previous analysis of Slovenian multiple *wh*-fronting by Golden (1997), which built on Rudin (1988). The revised analysis shows that multiple *wh*-fronting in Slovenian proceeds to check the [+focus] feature. Evidence for this comes from the lack of Superiority effects in different environments, which is shown in (2) for short-distance null-C matrix questions, in (3) below for embedded questions, and in (4) for questions with topicalization (see Mišmaš, forthcoming, for more).

- (3) (a) Peter in Ivan ne vesta, kdo je koga užalil.  
 Peter and Ivan not know who.NOM is who.ACC insulted  
 “Peter and Ivan don’t know who insulted whom.”
- (b) Peter in Ivan ne vesta, koga je kdo užalil.

<sup>1</sup> Slovenian does display some optionality of *wh*-fronting, which was first noted in Golden (1997). The question of optionality will be left aside at this point.

- (4) (a) V tej šoli, kdo koga vzgaja?  
 in this school who.NOM who.ACC educates  
 “In this school, who educates whom?”
- (b) V tej šoli, koga kdo vzgaja?

Following work by Bošković (1997, 2002), Mišmaš (forthcoming) takes the lack of Superiority as an indicator of the fact that no *wh*-phrase moves to CP in Slovenian; the final position of moved *wh*-phrases is below CP in the IP (for a similar analysis of Russian, see Stepanov 1998).

Such an analysis of *wh*-fronting in Slovenian is also supported by the evidence from the interpretation of multiple questions, where a division between single-pair and pair-list answers has been established in the literature. Bošković (2001a, 2002) shows that *wh*-movement to SpecCP forces a pair-list reading and that when no *wh*-element is overtly moved to SpecCP, both single-pair and pair-list answers are available (e.g., Bulgarian only has a pair-list answer, while SC has both pair-list and single-pair answers, which means they move *wh*-phrases below CP, Bošković 2002). Slovenian allows both single-pair and pair-list answers, which is typical for languages that do not move *wh*-phrases to CP.

To summarize, I have shown above that Slovenian is a language in which all *wh*-phrases move to the clause initial position; we therefore have *wh*-movement in the IP. Below I will look at the second component of the parallel that we are trying to establish: the DP.

### 3. Slovenian Noun/Determiner Phrases

In order to explore the possibility of multiple *wh*-fronting in noun phrases we must first explore some general properties of Slovenian noun phrases.

#### 3.1 Slovenian as a DP or NP Language

Slovenian is a language without a definite, but with an indefinite, article:

- (5) En fant je zapel eno pesem.  
 a boy is sang a song  
 “A boy sang a song.”

There are two different analyses for languages without a definite article. The analysis which proposes a DP layer also for languages without a determiner is argued for by Progovac (1998) and Pereltsvaig (2007). In this view the determiner is phonologically null. The second analysis is that in languages that do not have an overt determiner, such as Serbo-Croatian (SC), Russian, etc., there is no DP layer, but rather just a NP

layer (Bošković 2008a). Still, despite the indefinite article, Bošković (2008b) analyzes Slovenian as a NP language. In this analysis the indefinite article is located below DP – the options for the location of the indefinite article are in a projection above NP (which would not be DP) or treating it like an adjective (Bošković 2008b, n19).

I assume that a DP layer is possible in Slovenian. I will show in Section 4 that the *wh*-word moves to the DP layer in noun phrases with *wh*-words. In order to achieve this we will first be looking at the Slovenian DP and then at fronting of *wh*-words in these phrases.

### 3.2 The Structure of the DP in Slovenian

In Slovenian DPs the modifiers of N are located to the left of N and the most common word order is Dem > Num > A. An example of such a DP is given in (6).

- (6) tisti prvi Majin plašč  
       that first Maja's coat

In addition, there are two kinds of numerals: ordinal and cardinal – typically in the word order shown in (7) below. The two have different corresponding *wh*-words: *kateri* “which” and *koliko* “how many/much”. Also, as in other languages, there are many different types of adjectives, which are positioned to the left of the noun and come in a fairly fixed hierarchy (which I will not be discussing here). I will be using three different types of adjectives – a possessive adjective, an adjective of color, and an adjective of origin. These three types can be questioned with different *wh*-words, which will help us understand the *wh*-extraction of these adjectives. The *wh*-words are: *kakšen* “what kind of” for questioning color, *kateri* “which” to question origin, and *čigav* “whose” to question the possessive adjective. Both demonstratives and the ordinal numeral can be questioned with *kateri* “which.” These *wh*-words agree (as do adjectives) with the gender, number, and case of the noun. I will be using the masculine singular nominative form in the following sections, but agreement for all three genders is shown in (8a–c). (8c) shows all the *wh*-words for adjectives in the underlying word order. The typical word order of adjectives is shown in (9):

- (7) prvih            pet            finalistov  
       first.ORD    five.CARD    finalists

- (8) (a) Majin                            rdeč                            nemški                            avto  
       Maja's.M.NOM.SG    red.M.NOM.SG    German.M.NOM.SG    car.M.NOM.SG
- (b) Majina                            rdeča                            nemška                            preproga  
       Maja's.F.NOM.SG    red.F.NOM.SG    German.F.NOM.SG    rug.F.NOM.SG

- |     |                 |              |                 |                  |
|-----|-----------------|--------------|-----------------|------------------|
| (c) | Majino          | rdeče        | nemško          | kolo             |
|     | Maja's.N.NOM.SG | red.N.NOM.SG | German.N.NOM.SG | bicycle.N.NOM.SG |
| (d) | Čigav           | kakšen       | kateri          | N                |
|     | whose           | what-kind-of | which           | N                |

(9) Dem>Num>A POSSESSOR>A COLOR>A ORIGIN/NATION > N

Other word orders have a marked reading, so the word order in (9) will be used as the basic word order throughout this chapter. This word order is however different (and has an unmarked reading) when a *wh*-element is present. This will be explored in the next section.

## 4. Wh-fronting in a DP

We will see below that any of the modifiers of the noun can be questioned with a *wh*-word. When this is the case, the *wh*-word typically appears at the left edge of the DP. In this section the positioning of *wh*-modifiers will be shown (the modifier that is questioned is in the bracket as a possible answer). We will first be looking at single *wh*-fronting in a DP in Section 4.1, and in Section 4.2 at multiple *wh*-fronting in a DP.

### 4.1 A Single Wh-word

In the DP any of the *wh*-words appear at the left edge. I will argue that the *wh*-word is moved to the DP (and is not merged to SpecDP as usually assumed), which is shown below for the *wh*-expressions for a possessive adjective (10), an adjective of color (11), and an adjective of origin (12).

- |      |              |        |        |      |    |            |          |
|------|--------------|--------|--------|------|----|------------|----------|
| (10) | Čigav        | rdeč   | nemški | avto | je | popraskan? | (Majin)  |
|      | Whose        | red    | German | car  | is | scratched  | (Maja's) |
| (11) | Kakšen       | Majin  | nemški | avto | je | popraskan? | (Rdeč)   |
|      | What-kind-of | Maja's | German | car  | is | scratched  | (Red)    |
| (12) | Kateri       | Majin  | rdeč   | avto | je | popraskan? | (Nemški) |
|      | Which        | Maja's | red    | car  | is | scratched  | (German) |

We can also front the demonstrative or the numeral of the DP:

- |      |        |       |        |      |        |      |    |            |            |
|------|--------|-------|--------|------|--------|------|----|------------|------------|
| (13) | Kateri | prvi  | Majin  | rdeč | nemški | avto | je | popraskan? | (Tisti)    |
|      | Which  | first | Maja's | red  | German | car  | is | scratched  | (That one) |

- (14) *Kateri* Majin rdeč nemški avto je popraskan? (Prvi)  
 Which Maja's red German car is scratched (First one)

Crucially, we can see that none of the *wh*-expressions of adjectives can be fronted across the demonstrative, as this leads to ungrammaticality (15). The same holds for the *wh*-form of the numeral if a demonstrative is in the DP (16).

- (15) (a) \**Kakšen* tisti prvi Majin nemški avto je popraskan? (Rdeč)  
 What-kind-of that first Maja's German car is scratched (Red)
- (b) \**Čigav* tisti rdeč nemški avto je popraskan? (Majin)  
 Whose that red German car is scratched (Maja's)
- (c) \**Kateri* tisti Majin nemški avto je popraskan? (Nemški)  
 Which that Maja's German car is scratched (German)
- (16) \**Kateri* tisti Majin rdeči nemški avto je popraskan? (Prvi)  
 Which that Maja's red German car is scratched (First one)

The ungrammaticality of the examples in (15) and (16) can be explained using Giusti's (1993, following Bernstein 2001) proposal that despite the fact that demonstratives are generated in a position below DP they universally move to SpecDP. This would indicate that *wh*-words, which front in a DP, front to the SpecDP position. (15) and (16) are ungrammatical because SpecDP is unavailable for *wh*-movement due to movement of the demonstrative. Additional evidence for this comes from the fact that *wh*-phrases can stay in situ when the demonstrative is present in the DP (17–18).

- (17) Tisti čigav rdeč nemški avto je popraskan? (Majin)  
 That whose red German car is scratched (Maja's)
- (18) Tisti Majin rdeč *kateri* avto je popraskan? (Nemški)  
 That Maja's red which car is scratched? (German)

It does, however, need to be noted that we can front *koliko* “how many” (cardinal numeral) over the demonstrative. Still, even in these examples, the *wh*-phrase can stay in situ:

- (19) (a) *Koliko* tistih Majinih rdečih avtomobilov je popraskanih? (Pet)  
 how-many that Maja's red cars is scratched (Five)  
 “How many of those Maja's red cars are scratched?”

(b) Tistih *koliko* Majhnih rdečih avtomobilov je popraskanih? (Pet)

Also, there is another restriction on movement from a DP – the noun cannot move from its base position:<sup>2</sup>

(20) \**Kaj* Majin rdeč nemški? (Avto)  
 What Maja's red German (Car)

(21) \**Kaj* tisti prvi nemški? (Avto)  
 What that first German? (Car)

In addition it should be noted that *wh*-words can stay in situ in the DP even when no demonstrative is present. When they stay in situ, they get an echo-reading (without emphasis they get a surprise reading, while *wh*-words with emphasis get both a request-for-repetition and a surprise reading):

(22) Majin *kakšen* nemški avto je popraskan? (Rdeč)  
 Maja's what-kind-of German car is scratched (Red)

(23) Majin KAKŠEN nemški avto?

The examples in this section have shown that a single *wh*-word appears at the beginning of a DP. This is only not possible when there is a demonstrative in the DP; the exceptions are questions with *koliko* “how many.” The analysis of examples in this section will be provided in Section 4.3, where the motivation for movement and the position of movement in the DP will be discussed.

## 4.2 Multiple *Wh*-fronting in a DP

Multiple *wh*-fronting in a DP is ungrammatical regardless of whether we front two

<sup>2</sup> A genitive noun can be fronted in a DP but usually with the question word for possessor and not the *wh*-word for genitive, which is more grammatical in situ:

- (i) Uničenje mesta  
 destruction city.GEN  
 “The destruction of the city.”
- (ii) Čigavo/?Česa uničene?  
 whose/what.GEN destruction
- (iii) Uničenje česa?  
 destruction what.GEN

adjectives or an adjective and a numeral or a demonstrative. As we can see in examples (24)–(27), which do not have a demonstrative, we can exclude ungrammaticality because of the demonstrative in a DP. The examples (24b), (25b) and (26b) show that multiple *wh*-fronting in a DP is not ungrammatical because of a certain order of *wh*-phrases.<sup>3</sup>

(24) (a) \**Čigav kakšen nemški avto je popraskan?* (Majin rdeč)  
 Whose what-kind-of German car is scratched (Maja's red)

(b) \**Kakšen čigav nemški avto je popraskan?*

(25) (a) \**Čigav kateri rdeč avto je popraskan?* (Majin nemški)  
 Whose which red car is scratched (Maja's German)

(b) \**Kateri čigav rdeči avto je popraskan?*

(26) (a) *Kakšen kateri Majin avto je popraskan?* (Rdeč nemški)  
 what-kind-of which Maja's car is scratched (Red German)

(b) \**Kateri kakšen Majin avto je popraskan?*

(27) \**Kateri kateri Majin avto je popraskan?* (Prvi nemški)  
 which.NUM which.ADJ Majin car is scratched (First German)

(28) \**Kateri kateri Majin rdeč nemški avto je popraskan?* (Tisti prvi.)  
 Which.DEM which.NUM Maja's red German car is scratched (That first one)

Note that (27) and (28) are not ungrammatical because of the sequence of homophonous words. While there is a restriction against sequences of homophonous *wh*-words in some languages, such as Serbo-Croatian (see Bošković 2001b), there is no prohibition against this in Slovenian (Mišmaš 2013):

(29) Kaj kaj pogojuje?  
 what what conditions  
 "What conditions what?"

3 Still, coordinated questions in a noun phrase are possible. This is not surprising if we assume a bi-clausal analysis of coordinated *wh*-questions as proposed by Citko and Gračanin-Yuksek (2012).

(i) *Čigav in kakšen nemški avto?* (Majin rdeč)  
 whose and what-kind-of German car (Maja's red)

As expected from the fact that we cannot front the *wh*-noun, we also cannot front a *wh*-modifier and a *wh*-noun (30). Also, not only multiple fronted *wh*-words are prohibited in a DP; even if just one *wh*-word fronts and one stays in situ, the DP is unacceptable (31).

(30) (a) \**Kakšen kaj Majin nemški je popraskan?* (Rdeč avto)  
 what-kind-of what Maja's German is scratched (Red car)

(b) \**Kaj kakšen Majin nemški je popraskan?*

(31) (a) \**Kateri Majin kakšen nemški avto je popraskan?* (Prvi rdeč)  
 Which Maja's what-kind-of German car is scratched (First red)

(b) \**Čigav rdeč kateri avto je popraskan?* (Majin nemški)  
 Whose red which car is scratched (Maja's German)<sup>4</sup>

The exception to the “no-multiple *wh*-words in DP” rule are the *how-many*-DPs. This means that we can find questions like (32a) below in Slovenian. With *koliko*, however, the word order in these *wh*-phrases is fixed.

(32) (a) *Koliko kakšnih nemških avtov vidiš?* (Pet rdečih)  
 how-many what-kind-of.PL German cars sees (Five red)  
 “How many of what kind of German cars do you see?”

(b) \**Kakšnih koliko nemških avtov vidiš?*

Also, despite the fact that we cannot front multiple *wh*-words in a DP, we can front a *wh*-word and a (contrastively) focused word, but the *wh*-word must precede the focused word (see Section 4.3).

(33) (a) *Kakšen NEMŠKI Majin avto je popraskan?* (Rdeč)  
 what-kind-of German Maja's car is scratched (Red)

(b) \**NEMŠKI kakšen Majin avto?*

4 Slightly better when the *wh*-in-situ is emphasized and gets an echo interpretation:

(i) *Čigav rdeč KATERI avto?*  
 Whose red WHICH car

To summarize this section, it was shown that multiple *wh*-fronting in a DP is always prohibited. The only exceptions to this are questions with *koliko* ‘‘how much/many’’.

### 4.3 Movement to SpecDP and the Availability of the DP Layer in Slovenian

We have seen above that there is no multiple *wh*-fronting in a DP. However, a single *wh*-phrase in the DP is located at the beginning of the DP. If we again look at the underlying word order in (34) and (35) we can see that the position of the *wh*-phrase moves to the beginning of the DP as in (35). Even more striking is the contrast between (35b) and (35c), where the *wh*-phrase stays in situ when there is a demonstrative. The availability of two different positions suggests that a *wh*-phrase does in fact move. Example (35d) shows that a *wh*-phrase moves to SpecDP if we assume that demonstratives universally move to SpecDP.

(34) Dem > Num ORD > Num CARD > A POSSESSOR > A COLOR > A ORIGIN/NATION > N

- (35) (a) Tisti prvi Majin rdeč nemški avto  
 That first Maja’s red German car
- (b) *Kateri* Majin rdeč avto je popraskan? (Nemški)  
 Which Maja’s red car is scratched (German)
- (c) Tisti Majin rdeč *kateri* avto je popraskan? (Nemški)  
 That Maja’s red which car is scratched (German)
- (d) \**Kateri* tisti Majin rdeč avto je popraskan? (Nemški)  
 Which that Maja’s red car is scratched (German)

The question is then also what the motivation for movement is. Based on *wh*-fronting in the IP, one might suggest focus. As we have seen, there can be focus fronting in Slovenian DPs, which is repeated below. Note that the contrastively focused phrase has to appear after the *wh*-phrase.

- (36) (a) Kakšen NEMŠKI Majin avto?  
 what-kind-of German Maja’s car
- (b) \*NEMŠKI kakšen Majin avto?

- |     |              |         |        |              |        |       |
|-----|--------------|---------|--------|--------------|--------|-------|
| (c) | Kakšen       | MAJIN / | *MAJIN | kakšen       | nemški | avto? |
|     | what-kind-of | Maja's  | Maja's | what-kind-of | German | car   |

A focused reading is also available in a DP when a focused phrase has no emphasis (nor is it a *wh*-element) – in these examples the focused word must front (in [37a] the word *rdeč* “red” is focused and if we compare the word order in [37a] to the base word order in [35a] above, we can see how it has changed). The focus word, however, can never move across the demonstrative (37b):

- |      |     |       |       |        |       |
|------|-----|-------|-------|--------|-------|
| (37) | (a) | Tisti | rdeč  | Majin  | avto. |
|      |     | That  | red   | Maja's | car   |
|      | (b) | *Rdeč | tisti | Majin  | avto. |
|      |     | Red   | that  | Maja's | car   |

This suggests that, as Giusti (1996) shows for Albanian, the focus position is below the demonstrative, which following Giusti (1993) is located in SpecDP.

Returning to the examples in (36), these examples suggest that *wh*-fronting proceeds higher than focus fronting and also that *wh*-fronting in a DP is not an instance of focus fronting (if both phrases moved for focus, then the word order would either be free or it would always be the case that the higher phrase in the underlying word order has to move first, which is not the case, as shown in (36c) where the *wh*-word *kakšen* “what kind of” has to move first despite being lower in the underlying word order (cf. [35a]). From this word order we can conclude that *wh*-phrases in the DP do not move for focus reasons.

A possible solution for movement is the definiteness feature. As we have seen, the demonstrative blocks the *wh*-modifier from appearing at the beginning of the DP. We have already assumed that demonstratives are generated in a position below DP and that they universally move to SpecDP (Giusti 1993; Bernstein 2001; Alexiadou et al. 2007). Based on the unacceptability of examples with a demonstrative and a *wh*-word, and on this assumption, I suggest that *wh*-words move to SpecDP. But an additional assumption about demonstratives is that they entail definiteness (Lyons 1999), and that the [def] feature is in turn typically associated with D (Alexiadou et al. 2007). This definiteness feature is associated with identifiability – the speaker signals that the hearer is able to locate a referent for a DP; familiarity – what the speaker refers to is a part of the knowledge shared by speaker and hearer; and uniqueness – there is just one entity (or one set) satisfying the description used (Alexiadou et al. 2007). If we look at the meaning of the *wh*-DPs above, this seems to be exactly what they mean: we are asking about the defining property of an entity (or a set) that will exclude all other candidates in the context and give us a unique entity (or a set of entities).

I suggest that movement proceeds because of the definiteness feature:  $D^{\circ}$  has a [def] feature and an EPP-feature that needs to be checked – and it is checked by the moved *wh*-word, which has a [def]-feature and a [wh]-feature. The *wh*-word moves to SpecDP, but the [wh]-feature is still not checked – it gets checked further on in the derivation.

It is then not surprising that the demonstrative blocks movement: Slovenian is one of the many languages that do not allow multiple definite items in a phrase. In addition, this accounts for the fact that we cannot front two *wh*-adjectives, but we can front *koliko* “how much/many” and a *wh*-adjective, and that we can front *koliko* “how much/many” over a demonstrative (the intuition being that *koliko* “how much/many” does not carry a definiteness meaning).

## 5. Conclusions

In this chapter I have given evidence for single *wh*-movement in the Slovenian DP. This means that CPs and IPs on the one hand, and DPs and NPs on the other, exhibit parallel behavior, as has been proposed in the past (Abney 1987, etc.). I have suggested that the position to which *wh*-phrases are moved in the DP is SpecDP and the motivation for movement is the definiteness feature. I have also shown that there are differences between the DP/NP and CP/IP projections: while multiple *wh*-fronting is available in Slovenian on a sentential level, there is no multiple *wh*-fronting in the DP.

## Résumé

Ludmila Veselovská

Like the structure of verbal projections, the cartography of their nominal counterparts is currently a topic of much discussion, in terms of both its universal and/or language specific layout. This monograph provides several detailed case studies from mainly Slavic languages, a specific feature of which is their rich nominal morphology and their lack of English-like constraints on word order. In spite of the fact that most of these languages have a long history of traditional linguistic analyses and descriptions, their generative history is relatively short and these analyses are still far from uniform. As for their nominal structures, recent discussion mainly concerns the functional domain above NP and is usually related to the lack of articles. This monograph, however, seems to present (in the Slavic domain) a surprisingly uniform argumentation in favor of a universal functional projection with perhaps language-specific realizations of individual functional heads. As for the DP projection, the Slavic languages rank alongside their non-Slavic counterparts mentioned in some of the chapters of this book.

The introductory Chapter 1 (by Ludmila Veselovská from the Department of English and American Studies, Palacký University, Olomouc) summarizes the arguments in favor of a universal DP hypothesis (i.e., in favor of the presence of a functional D projection) in “articleless” Czech. The data demonstrate several different types of evidence on the levels of semantics, morphology, and syntax in favor of a functional domain with a usually covert head above the projection of a lexical noun. The semantic arguments include interpretation and pronoun-binding facts. The pronominal morphology of the candidates for the lexical entries in the functional domain is contrasted with the morphology of Czech adjectival modifiers to show the distinction at the level of morphology. In the syntactic domain the distribution within the nominal domain and word order restrictions are demonstrated together with the results of corpora searches.

A more specific but still general overview of arguments suggesting the DP analysis of Serbo-Croatian nominal expressions is provided in the initial sections of Chapter 2 (by Branimir Stanković from the Faculty of Philosophy, University of Niš). The author first offers empirical evidence in favor of the split DP analyses of Serbo-Croatian (SC) nominal expressions, and then concentrates on the widely discussed phenomenon of left branch extractions. He argues that Serbo-Croatian spatial and temporal adjectives (and possessive adjectives and pronouns in pre-cardinal position) get the definite/unique/specific reading by a movement from the inflectional domain to some functional projection of the split-DP *i*, which allows them to express features separate from their lexical content. The author points out that these expressions, specifically the ordinal and functional adjectives *isti* (“same”) and *pomenuti* (“mentioned”)

cannot be extracted from the rest of the nominal expression, contra Bošković 2008; they always precede the noun (*drugi/naredni isti sastanak*), while the reverse order is ungrammatical (*\*sastanak drugi/naredni/ isti*). The discussion assumes that SC nominal expressions project a phonologically null DP, which can be occupied by determiners, STPAs or some other discourse-linked adjectives, and act as barriers for left branch and adjunct extractions, thus giving rise to a more restricted word order and definite/unique/specific interpretations.

## 1.1 Nominal Functional Heads

A number of plausible candidates for the head (or SPEC) position within the functional domain of nominal projections have already been mentioned in the preceding summaries, and they include e.g. demonstratives, possessives, and, especially, quantifiers.

As for numeric expressions, a diachronic approach to the grammaticalization process of numeric elements within nominal projections is provided in Chapter 3 (by Katarzyna Miechowicz-Mathiasen from Adam Mickiewicz University in Poznań). The author proposes an analysis of the process of numeralization in Polish, concentrating on its source and outcome. She argues that higher numerals, i.e.,  $\geq 5$ , have shifted from the category of nouns to a new category of numerals, with morpho-syntactic properties specific only to that. The investigation focuses on three bases, 10/100/1,000, which are shown to be at different stages of this process. On the basis of their historical development, particularly the paradigmatic changes that affected them (concerning e.g. the Gender category), as well as accompanying adjustments in their syntax, the author proposes that numeralization involves a syntactic change. The originally biphrasal nominal structure was reduced into a single one. The once-nominal numeral lexicalizes a Num<sup>o</sup> head (NumP) in the extended projection of its complement (the noun being counted). The investigation covers the period between the 15th century and today and draws on data from both literary and normative texts.

Semantic aspects of some quantifiers are discussed in detail in Chapter 4 (by Marcin Wągiel from Palacký University, Olomouc, and Masaryk University, Brno), which considers their potential compositionality, collectivity, and/or distributivity. The analysis of plurality, based on the formal semantic theory of Landman (2000 and other work), is applied to the semantic properties of Polish NPs headed by numerals with the suffix *-e*, e.g., *dwoje studentów* “two students.” The author presents constraints on the distribution of these numerals and provides evidence that the constraints follow from their semantics. The author further argues that Polish numerals with the suffix *-e* are compositional, and he discusses the semantic contribution of each morpheme in their morphological make-up. Having examined three types of NPs in which numerals with the suffix *-e* can appear, the author proposes a semantic interpretation of each type of such NPs.

Numeric expressions are also the main topic in Chapter 5 (by Elena Rudnitskaya from the Institute of Oriental Studies RAS, Moscow), who concentrates on the syntactic properties of the Korean floating quantifier-classifier construction. The author favors an approach that integrates the formal syntactic and information structure analyses of the numerals. First, she briefly reviews existing formal syntactic analyses of the post-nominal classifier construction in Korean, which is usually considered to be similar to the floating quantifier construction. Then she considers a more traditional Small Clause analysis and the more recent analysis of Hee-Jeong Ko based on a cyclic Spell-out model. The chapter also discusses how the Small Clause analysis and that of Hee-Jeong Ko can be combined to provide a complete account of the data, highlighting the advantages of such a combined analysis. The author argues that Information Structure factors (such as context-prominence, foregrounding and backgrounding), the referential status of the nominal that is quantified, and lexical features (such as grammaticalization) affect case-marking in this construction. The study makes a proposal for how these factors can be incorporated into a formal-syntactic analysis so that it covers all the data presented.

Demonstratives are obvious candidates for some position in a functional domain of a nominal projection. The phonological characteristics of the Czech demonstrative *ten* “the/ this” in terms of their informational relevance are discussed in Chapter 6 (by Magdalena Zíková and Pavel Machač of Charles University in Prague, Czech Republic). This chapter considers the grammatical nature of the Czech word *ten* “the/ this,” which is conventionally described as a demonstrative pronoun; however, it is alternatively viewed by some linguists as an incipient definite article. The chapter focuses on the phonetic realization of this word in spontaneous speech, particularly its segmental features, and relates the amount of segmental reduction to the phonetic, linguistic, and informational structure of the utterance, primarily the theme vs. rheme distinction. The assumption is that the demonstrative forms in the theme are more reduced than those in the rheme, as a result of their lesser informational load. Although the role of phonetic parameters (the position in the tone group and the type of the following segment) is clearly distinct, the position of the demonstrative in the theme or the rheme does not prove to be directly related to the degree of phonetic reduction.

Other candidates for various positions within a nominal functional domain are traditional possessive elements, which are mentioned in several chapters of this monograph. They are discussed in detail in the comparative Chapter 7, by Ludmila Veselovská from the Department of English and American Studies, Palacký University, Olomouc, who contrasts the morphosyntax of possessives in English and Czech. The author demonstrates that both the English and Czech nominal structures contain lexical and functional domains which host elements called possessives. Their interpretation in both languages can be related to a uni-

versal thematic hierarchy, which distributes semantic roles between prenominal possessives and postnominal genitives, including the *of*-genitives and double genitives in English. However, although the Czech and English structures are similar, there are specific formal distinctions between the two, which limit their usage. As a consequence, the languages apply comparable strategies to disambiguate and compensate for the specific features of the characteristics of their respective possessives in syntax. She shows that as a result of formal distinctions in the constituent characteristics in the two languages, both may realize semantically and functionally adequate equivalents of nominal Semantic Arguments, using distinct (but predictable) grammatical means.

Chapter 8 (by Andrea Hudousková from Charles University in Prague) investigates the functional domain of a nominal projection and the presence of specific functional heads from the perspective of language acquisition and concentrates on distinctions between nominal structures in typologically distinct languages as they emerge in the language learning process. The author focuses on the mistakes of Chinese learners in Czech DPs that consist of using a nominal attribute instead of a correct denominal adjectival form. The language acquisition problem is treated in terms of the analyticity/syntheticity parameter within the Chomskyan minimalist framework, i.e., as a part of the broader program of principles and parameters. The author concludes that while in analytic languages the form of words does not change and functional elements are often overtly expressed in their base positions, synthetic languages are quite the opposite. This difference in language typology is captured in the minimalist notion of feature strength and interpretability. Assuming that phrase structure is universal, language acquisition is claimed to consist of resetting the analyticity/ syntheticity parameter, specifically the strengths of features of functional heads.

## 1.2 Left Periphery Phenomena

Assuming the general head-initial characteristics for most of the languages analyzed in this monograph, phenomena that are typical of the left periphery of verbal projections are also discussed in detail in relation to the nominal functional domain.

Chapter 9 (by Bożena Cetnarowska from the University of Silesia in Katowice) investigates restrictions on the movement of adnominal genitives in Polish from post-head to pre-head position. It is argued that this type of fronting provides support for the recognition of a split Determiner Phrase in Polish. The placement of the preposed genitive is considered with respect to other elements of DPs (including demonstratives and focused adjectives). The author suggests that the preposed genitive occupies the specifier of the Topic Phrase, which is DP-internal in Polish. Other constituents of the noun phrase mentioned can be merged in the Topic Phrase or Focus Phrase, at the left periphery of the nominal domain. Similar topicalization

fronting has been proposed for Romance languages in, among others, Ihsane and Puskás (2001) and Giusti (2005)).

In this monograph the left periphery in Romance nominal projections is discussed in more detail in Chapter 10 (by Manuela Gonzaga from the University of Lisbon). The author proposes an analysis of nominal expressions in which syntax and discourse interact, producing word order asymmetries that are often observed in Romance languages and widely discussed in the literature. She presents data supporting the hypothesis that different adjectives may be merged in distinct positions, but also that the linear order obtained may be the result of some discourse interference. Thus, the head noun selects the type of elements co-occurring with it; it may have arguments or just (strict) modifiers, both being merged inside the “lexical shell.” Although data from adjectives already pointed to the presence of some discourse influence in the syntax, she argues that the morphology of possessives constitutes evidence that there is a grammatical relation between syntax and discourse, and that the latter intervenes in syntax.

The left periphery of the nominal projection, specifically the phenomena of *wh*-fronting in a DP, also appears in Chapter 11 (by Petra Mišmaš from the University of Nova Gorica). This chapter builds on a parallel that has been established between CP and DP on the one hand and IP and NP on the other. Based on this, the main question of the paper is whether a *wh*-fronting language can also have *wh*-fronting in a DP, similar to focus fronting of nominal modifiers. Taking this idea even further, the author also explores the idea of multiple *wh*-fronting in a DP in a multiple *wh*-fronting language (such as Slovenian, which is the main source of data here). While multiple *wh*-fronting in a DP does not give grammatical results, she shows evidence that *wh*-words are not merged into their final position in a DP (as it is typically assumed), but that they are moved there.

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