Chapter 3

New developments in the semantics of noun phrases in Slavic languages

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The paper gives a general overview of the theoretical approaches to the semantics and syntax of nominal phrases. It shows how the recent work on this topic in formal Slavistics has contributed to the further development of the theory. The following issues are addressed: What counts as reliable evidence for the assumption of the DP-layer in articleless Slavic languages? How do Slavic languages express the distinction between strong definiteness based on anaphoricity and weak definiteness based on situational uniqueness? What is the semantic concept behind definiteness contributed by NPs in the topic position? What is the meaning of special collective nouns such as Czech *dvojice* 'a group of two people' and Russian complex numerical measure nouns such as *strogrammovka* 'a 100-gram glass'? What do nominal roots in Slavic languages denote before they enter different syntactic environments and how do different syntactic environments determine their interpretation? Is there evidence for the assumption of the functional projections NumP and ClassifierP in addition to NP and DP in Slavic languages?

Keywords: DP syntax, DP semantics, definiteness

1 Introduction

The goal of this article is twofold: At a general level, its aim is to give an overview of the development of theoretical approaches to the semantics (and syntax) of nominal phrases since Abney (1987) and to determine the current state of the art in this particular field. A second, more specific task is to set the scene for the contributions by the participants of the "Semantics of Noun Phrases" Workshop held on December 6, 2018 at the University of Göttingen as a part of the 13th Conference on "Formal Description of Slavic Languages" (FDSL 13). The workshop

Ljudmila Geist. New developments in the semantics of noun phrases in Slavic languages. To appear in: Andreas Blümel, Jovana Gajić, Ljudmila Geist, Uwe Junghanns & Hagen Pitsch (eds.), *Advances in formal Slavic linguistics 2018*. Berlin: Language Science Press. [early access; preliminary page numbering]

focused on nominal categories and their interpretation and formal representation. As under the principle of compositionality the meaning of the whole is determined by the meanings of its syntactic parts, the papers address not only semantics but also the syntax of noun phrases. In this article I want to identify the main questions in the current research on noun phrases in Slavic but also in other languages and show how the papers by the workshop participants can contribute to answering some of these questions.

Since the formulation of the DP-hypothesis in Abney (1987) and the introduction of D as a functional category for determiners, various functional projections between D and NP have been added to integrate nominal categories such as number and host numerals and attributive adjectives cross-linguistically (see Alexiadou et al. 2007; Borer 2005; Cheng & Sybesma 1999; Cheng et al. 2017; Zamparelli 2000; a.o). Many researchers agree upon at least the DP layers depicted in Figure 1.

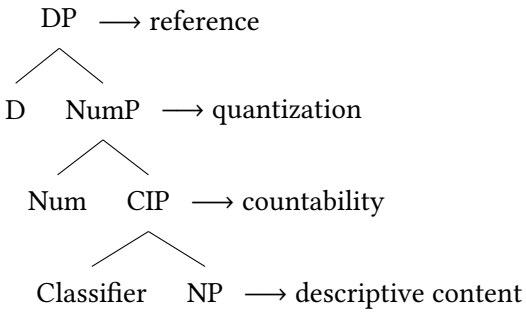

Figure 1: DP-layers

Each layer is a host for a particular element that is endowed with a particular semantic function. The head D maps the whole phrase into an argument. The DP-layer hosts strong determiners such as definite articles and demonstratives. The Numeral Phrase NumP is responsible for quantization, i.e. it is the place where cardinals and other weak determiners and quantifiers can merge. The analysis of Borer (2005), but also Cheng et al. (2017) and Cheng & Sybesma (1999), among others, posits a Classifier head responsible for countability. It is the host for classifiers in classifier languages and for plural morphology in languages without classifiers. The lowest layer, the NP, is projected by the noun introducing descriptive content.

The internal semantic and syntactic architecture of DPs has traditionally been a topic of research in Slavic languages as well. Although most Slavic languages

have no articles, the instantiation of definiteness in the D-layer has received a lot of discussion. Numeral and classifier layers have been assumed as well.

In what follows, I will go through the layers of the DP and mention some current topics of debate which serve as connecting points for contributions in this volume. We start with the highest layer, the DP.

2 DP

2.1 DP-layer: yes or no?

Since many Slavic languages lack articles, the availability of the DP projection in those languages has been hotly disputed. The question is whether nominals in articleless Slavic languages are DPs, as in the Germanic or Romance languages, or bare NPs (or possibly intermediate structures). There are three views: (i) According to the so-called Universal DP approach, adopted by Longobardi (1994) and Matthewson (1998), among others, the structure of noun phrases in languages without articles is the same as in languages with articles such as English and German: argument noun phrases are projected fully as DPs in both types. (ii) The proponents of the so-called Parameterized DP approach, among others Chierchia (1998) and Baker (2003), claim that the structure of noun phrases in languages without articles differs radically from that of languages with articles: in the former type of language, noun phrases do not project a DP. The following table from Veselovská (2014) lists the proponents of each theory in Slavic linguistics.

Table 1: Universal vs. parameterized nominal projection (Veselovská 2014: 13)

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

(iii) Pereltsvaig (2006) develops a new view on the structure of noun phrases: she assumes that verbs take arguments of various semantic types and syntactic

sizes. In addition to generalized quantifiers of type $\langle\langle e, t\rangle, t\rangle$ and referential DPs of type e, they are able to take arguments of type $\langle e, t\rangle$ as well. Some heads, such as the Russian cumulative prefix *na-*, select only arguments that are NPs or NumPs of predicate type $\langle e, t\rangle$.

Further evidence for the type $\langle e, t\rangle$ is the use of NPs as predicative complements of the copula verb *be*. According to Partee (1987), constituent conjunction requires identical semantic types, and as adjectives are treated as type $\langle e, t\rangle$, the predicative NP *millioner* 'millionaire' in (1) must also be of type $\langle e, t\rangle$, i.e. a non-referential predicative expression.

(1) On chotja i millioner, no očen' skromnyj.
he although and millionaire but very modest
'Although he is a millionaire, he is very modest.' (Russian)

There is also a semantic argument in favor of a DP layer for some occurrences of noun phrases in Russian. Normally, the DP is identified as the locus of referentiality. Borer (2005), for example, states that only DPs have referential indices and can be interpreted as arguments. In my work (Geist 2010), I have shown that bare NPs in the topic position in Russian are always referential and definite, see (2). In the first clause, *mal'čik* 'boy' and *devočka* 'girl' introduce new discourse referents and the topical noun phrase *devočka* in the second clause anaphorically picks out the same individual girl introduced in the first clause. If a non-definite use is intended, the NP *devočka* must be accompanied by the indefiniteness marker *odin* 'one'.

(2) Ja uvidela mal'čika i devočku. Devočka nesla korzinku.
I saw boy and girl girl bore basket
'I saw a boy and a girl. The girl bore a basket.' (Russian)

Provided that DPs are the locus of referentiality and bare nouns in Russian can be used referentially at least in the topic position, it must be assumed that they may project a DP.

Besides semantic evidence in favor of a DP level in Slavic, there is some syntactic support in the literature (see the overview in Pereltsvaig 2013). At least the following arguments have been mentioned: (i) a rigid order of prenominal adjectives, (ii) a split between light and heavy adjectival modifiers, and (iii) maximal interpretation of prenominal possessives. We will not discuss all these arguments but will look only at the last one, since it was addressed in the workshop.

Kagan & Pereltsvaig (2014) observe that the syntactic position of the possessive adjective relative to the numeral has an impact on the interpretation of the

whole phrase, see (3). In the unmarked order (3a), where the possessive follows the numeral, the phrase is neither interpreted as maximal nor exhaustive: Dima may have more than five books. Kagan & Pereltsvaig (2014) discuss the possible alternative marked order (3b) where the possessive precedes the numeral. Unlike (3a), this phrase can only receive a maximal or exhaustive interpretation and presupposes that Dima has exactly five books. Kagan & Pereltsvaig (2014) assume that the maximal interpretation in (3b) comes about as a result of the placement of the possessive in a syntactically high position in the DP-domain above the numeral in the NumP. The possessive adjective in (3a), however, is placed low, in the NP-domain which is below NumP.

(3) a. pjat' Diminyx knig — not maximal
five Dima.GEN.PL books
'Dima's five books'

b. Diminyx pjat' knig — maximal/exhaustive
Dima.GEN.PL five books
'Dima's five books' (Russian)

But there is evidence that even NPs preceded by possessive adjectives without numerals can project full DPs. As (4) shows, nouns occurring with possessive adjectives can be used anaphorically: *Petin kollega* in the second clause in (4) picks up the colleague introduced in the previous clause. Since anaphoric NPs must be DPs following Kagan & Pereltsvaig (2014), we would assume that the possessive adjective *Petin* in *Petin kollega* 'Petja's colleague' is a modifier that applies at the high DP-level and hence indicates the presence of a zero D-head. Pereltsvaig's (2007) position is more radical, she analyzes the possessive adjective as a D-element.

(4) U Peti novyj kollega i u Niny tože. Petin kollega očen'
with Petja new colleague and with Nina too Petja's colleague very
molod.
young
'Petja has a new colleague and Nina, too. Petja's colleague is very young.'
(Russian)

Gepner (2021 [this volume]) investigates the morphological and syntactic properties of possessives but also demonstratives and the quantifier *každyj* in Russian. She examines whether these expressions can provide evidence for a DP-layer.

She shows, based on their morphological and syntactic properties, that prenominal possessives and demonstratives behave as adjectives rather than determiners and argues that they do not fulfill the criteria for a D-element. NPs accompanied by them can occur in predicate positions as shown in (5) and in existential sentences, where typical DPs such as proper names are excluded.

(5) Ivan byl petinym kollegoj.
Ivan was Peter's.INS colleague.INS
'Ivan was Peter's colleague.' (Russian)

According to Gepner, the interpretation of the possessive adjective in the predicate NP such as (5) does not differ from the interpretation of possessive adjective in an argument NP such as (4). She assumes that in both cases possessive adjectives modify the noun within NP, e.g., are always placed low in the structure. An exception is the quantifier *každyj*. Despite patterning morphologically with adjectives, it has the syntax and semantics of a quantifier and behaves like a functional element outside the NP. Gepner leaves open in which functional layer *každyj* is hosted. But is the interpretation of the possessive NP in (5) really the same as the interpretation of the possessive NP in (4)?

There is an old observation that the interpretation of possessive NPs depends on their use as arguments or as predicates. Jespersen (1965) discusses example (6) in English:

(6) a. The captain of the vessel was my brother.
b. My brother was captain of the vessel.

Jespersen says that in (6a) *my brother* in the predicate position means 'one of my brothers', or leaves it unspecified whether the speaker has more than one brother, whereas *my brother* in the argument position in (6b) has a maximal/unique or exhaustive interpretation 'the speaker's only brother'. To explain this difference in interpretation, Kagan & Pereltsvaig (2014) would assume that the possessive adjective *my* in (6b) is placed in the "high" DP-domain, which excludes the non-exhaustive interpretation. The placement of the possessive in the "low" NP-domain as in (6a) would only specify the relational meaning of *brother* and have no restriction on the unique/non-unique interpretation. Under Gepner's analysis, however, *my* would be integrated low in the NP-domain in both cases. The lack of non-maximal interpretation of the possessive NP in the argument position in (6b) should then be explained in a different way. The validity of both analyses should be compared in the future research.

2.2 DP-layer: two types of definites

Many languages such as German and Mauritian Creole differentiate between two types of definites (Löbner 2011; Schwarz 2009; 2013; Jenks 2015). Definites that have a more complex form indicate an anaphoric link and are called "strong definites". Definites with a simpler form, the so-called "weak definites", express definiteness based on situational UNIQUENESS. In standard German, the contrast between the two forms is reflected in cases where a definite can contract with a preceding preposition. The contracted form is the weak form, indicating situational uniqueness while the non-contracted one is a strong form indicating an anaphoric use.

(7) a. Hans ging zu dem Haus.
Hans went to the$_{\text{strong}}$ house
'Hans went to the house.'

b. Hans ging zum Haus.
Hans went to-the$_{\text{weak}}$ house
'Hans went to the house.' (German; Schwarz 2009: 12)

Czardybon (2017) shows that a similar distinction between anaphoric and situational definiteness is made in Polish: The demonstrative *ten* as a strong determiner can optionally be used to signal anaphoric definiteness, while weak bare NPs are used if definiteness is based on situational uniqueness. In (8a), *mężczyzna* 'man' in its second occurrence is used anaphorically and is accompanied by *ten*. In (8b), the situationally unique NPs *odległość* 'distance', *sufit* 'ceiling', and *podłoga* 'floor' are used without *ten*, i.e., have a weak form.

(8) a. Widziałem jak do pokoju wchodził mężczyzna. Kiedy
see.PST.1SG how in room.LOC enter.PST man when
wszedłem obaczyłem że przy ornie stoi ten
enter.PST.1SG see.PST.1SG that at window.LOC stand.PRS DET
mężczyzna.
man
'I saw a man go into the room. When I entered I saw that the man was standing at the window.'
(Polish; Szwedek 1976: 96–97, cited from Czardybon 2017: 50)

b. […] odległość od sufitu do podłogi wynosi 2,85
distance from ceiling.GEN to floor.GEN amount.3SG.PRS 2.85
metra
meter
'the distance from the ceiling to the floor amounts to 2.85 meters.'
(Polish; Czardybon 2017: 74)

Thus, Polish obeys the standard correspondence between the form of the definite (strong vs. weak) and the use of definite descriptions (situationally unique vs. anaphoric).

Šimík (2021 [this volume]) studies the two types of definiteness in Czech. Czech also uses bare NPs and NPs combined with a demonstrative for definite reference. However, as Šimík shows, strong demonstrative NPs are also able to refer to situationally unique objects in addition to weak bare NPs, unlike Polish. To explain the division of labor between weak bare NPs and strong demonstrative NPs he distinguishes between two types of situational uniqueness: accidental uniqueness and inherent uniqueness. An object is inherently unique if it is unique in all relevant situations that are "like" the mentioned situation. An accidentally unique object is unique in the mentioned situation but need not be unique in other similar situations. Šimík discusses an example with the noun *tabule* 'blackboard'. The object referred to by this NP is typically unique in all classroom situations. By contrast, the object denoted by the NP *book* can be unique in a particular situation but it need not be unique in other situations in which books are typically involved. Thus, the referent of *the book* can only be accidentally unique. Accidentally unique objects in Czech are referred to by strong demonstrative NPs, while inherently unique objects are referred to by weak bare NPs, see Table 2.

Šimík uses situation semantics and proposes an analysis in which inherent uniqueness is taken to be a property of topic situations and accidental uniqueness a property of demonstratives. He shows how other types of NPs such as generic, anaphoric, and non-specific indefinite NPs can be analyzed within this framework.

2.3 DP-layer: semantics of definiteness

If definiteness is what the DP-layer may contribute, the question is what the semantic concept or notion behind it is. Definiteness is often considered to correspond to FAMILIARITY: The individual referred to by the definite expression has often been assumed to be familiar to the speaker and hearer, e.g. if the NP is used anaphorically (Christophersen 1939; Heim 1982). In the philosophical tradition,

Table 2: Two types of definiteness in Polish and Czech.

Polish (Czardybon 2017)	use	anaphoric	situationally unique	
	form	strong form: demonstrative NP	weak form: bare NP	
Czech Šimík (this volume)	use	anaphoric	accidentally unique	inherently unique
	form	strong form: demonstrative NP		weak form: bare NP

definiteness is assumed to correspond to uniqueness: a definite description conveys that there is exactly one individual in the situation that satisfies the description (Chierchia 1998; Dayal 2004; a.o.). Besides familiarity and uniqueness there are other less prominent notions of definiteness that we will not consider here. The two main notions of definiteness are in competition if we want to explain the use of the definite article in languages such as German or English: most uses can be explained by both theories, but some occurrences receive a better account in the familiarity theory and the others by uniqueness.

The common tenet is that languages without definite articles can convey the same meaning as definite descriptions do in languages with articles, albeit with different formal means. According to the classical view, bare NPs as themes obligatorily receive a definite interpretation in articleless Slavic languages. In my work Geist (2010) I explain and formalize this traditional belief using the notion of aboutness topic instead of theme, see (9).

(9) *Situation:* I saw a boy and a girl.
Devočka vošla v dom.
girl came into house
'The (*a) girl entered {the/a} house.' (Russian; Geist 2010: 193)

Given the situation in (9), we can utter *devočka vošla v dom*, where *devočka* can only receive a definite referential interpretation; an indefinite interpretation (that it was another girl, not anaphorically related to the previously mentioned girl) is not available. In the topical use of the bare NP in (9), familiarity and uniqueness coincide and it cannot be decided which notion of definiteness can better capture the definite interpretation.

In very recent work, Šimík & Demian (2020) provide experimental evidence that bare singular NPs as topics in Russian do not convey uniqueness. They test two scenarios via pictures: In the first picture there is a locomotive and a unique disconnected carriage. In the second picture there is a locomotive and two carriages, one of them is disconnected.

The authors show that Russian speakers can use sentence (10) with *vagon* 'carriage' as topic to describe both pictures, although the second picture violates uniqueness.

(10) Vagon otcepilsja
carriage disconnected
'The carriage got disconnected.' (Russian; Šimík & Demian 2020: 15)

From this they conclude that definiteness contributed by topical definiteness is not based on uniqueness.

The investigation by Seres & Borik (2021 [this volume]) is in line with Šimík & Demian's (2020) observations. They have the intuition that alleged uniqueness contributed by bare NPs as topics can be overridden in appropriate contexts such as (11). However, definiteness conveyed by the definite article for topical definites in English contributes strong uniqueness and cannot be overridden.

(11) a. Direktor našej školy pojavilsja v tok-šou.
director.NOM our school.GEN appeared in talkshow
'The director of our school appeared in a talkshow.'

b. Drugoj direktor (našej) školy vystupil na radio.
other director.NOM our school.GEN spoke on radio
'The other director (of our school) spoke on the radio.'
(Russian; Seres & Borik 2021 [this volume])

To account for the difference between Russian and English, Seres & Borik assume that the kind of definiteness expressed by bare nominals in Russian is better captured in terms of pragmatic strengthening than the uniqueness presupposition. While uniqueness contributed by the definite article is semantic in nature and can be formally represented by the iota operator, this representation is not appropriate for the purely pragmatic definiteness contributed by topicality of bare NPs in articleless languages. Following Heim (2011), Seres & Borik propose that bare nominal phrases in articleless Russian are born indefinite. Definiteness can be achieved by pragmatic strengthening of an indefinite and can have different sources: 'ontological' (or 'situational') uniqueness, topicality and/or famil-

iarity/anaphoricity. All these can be seen as sources for the familiarity of the object. Thus, familiarity rather than uniqueness in the narrow sense underlies definiteness contributed by the topical use of bare NPs.

To conclude, the experimental findings by Šimík & Demian (2020) and the investigation of uniqueness by Seres & Borik suggest that languages differ not only in the means that contribute to the expression of definiteness, but also in the type of concept of definiteness. Definite articles do not contribute the same type of definiteness as topicality in articleless languages.

3 Numeral phrase: numerals and collectivity

In addition to ordinary numerals, Slavic languages have a special class, the so-called collective numerals. Collective numerals can be nominalized and denote groups of *n* members of *x*, see Czech *dvojice* 'twosome = a group of two people'. Since such collectives range over sets they have been called SET COLLECTIVES. Dočekal & Šimík (2021 [this volume]) address the behavior of set collectives in comparison to collectives denoted by collective nouns such as *skupina* 'group' in Czech. The latter type of collectives ranges over atomic entities and has been called ATOM COLLECTIVES.

Although collections are composed of a plurality in both types of collectives, they differ in the accessibility of the members of that plurality. The difference becomes apparent in combinations with the determiner *each* and the binominal *each*. The two uses of *each* are illustrated in (12).

(12) a. Each [$_{PP}$ of the three girls] has bought three books. (determiner *each*)
b. Two girls have bought [$_{NP}$ three books] each. (binominal *each*)

Dočekal & Šimík show that the determiner *každý* 'each' cannot distribute over the members of collectives regardless of type. Binominal *každý*, on the other hand, can combine with set collectives yielding distribution over members of the collection, while it is excluded with atom collectives.

Thus, binominal *každý* serves as a diagnostic to test the accessibility of the members of collections and to distinguish between the two types of collectives: while the individual members of set collectives are at least weakly accessible, members of atom collectives are completely inaccessible and atomic from the outside.

The authors model the complex interaction of determiner *každý* and binominal *každý* with set and atom collectives within the Plural Compositional Discourse

Table 3: Atom collectives and set collectives

	skupina sportovců 'group of athlets' (atom collectives)	*dvojice sportovců* 'a group of two athletes' (set collectives)
distribution over members with determiner *každý*	*	*
distribution over members with binominal *každý*	*	✓

Representation Theory (PCDRT). The main idea of the formalization is this: while determiner *každý* distributes over both the restrictor and the nuclear scope, binominal *každý* only distributes over the distributive share denoted by the NP it is attached to, remaining neutral with respect to the collectivity and cumulativity of the material outside of its scope. This explains its compatibility with set collectives and its incompatibility with atom collectives.

4 Classifier phrase

4.1 Types of classifiers

The typological literature on the mass/count distinction commonly distinguishes between classifier and non-classifier languages. In classifier languages such as Chinese, nouns cannot be directly combined with a numeral and need the help of a classifier, the so-called individual or natural unit classifier (Krifka 1989; 1995), as in (13).

(13) san zhi bi
three CL pencil
'three pencils' (Chinese)

According to Cheng & Sybesma (1999), count classifiers in Chinese primarily serve to name the unit in which the entity denoted by the noun naturally occurs. Classifier languages are contrasted with non-classifier languages such as Slavic languages, which have count nouns that can be directly combined with numerals, as in (14).

(14) pjat' stolov
five tables.GEN.PL
'five tables' (Russian)

But non-classifier languages can also use a type of classifier which occurs in combination with mass nouns, see (15):

(15) tri litra vina
three liter.GEN.SG wine.GEN.SG
'three liters of wine' (Russian)

However, classifiers of the type in (15) considerably differ from Chinese classifiers in their status (lexical vs. grammatical) and function (measuring vs. counting). Cheng & Sybesma (1999) and Li (2013) argue that individual classifiers in Chinese have the status of a grammatical category. Their function is that of counting, which has to be distinguished from measuring. According to Rothstein (2010), "Counting puts entities (which already count as 'one') in correspondence with the natural numbers, while measuring assigns a (plural) individual a value on a dimensional scale" (Rothstein 2010: 386). The numeral 'five' in the counting context (14) provides a property of a plural entity in the denotation of N, expressing how many atomic units the plurality has. Rothstein argues that measure classifiers such as in (15) should rather be considered a lexical category for measuring. In (15) 'liter' combines with a numeral and together they form a measure predicate. In the syntactic composition, this predicate applies to sets of quantities expressed by the mass noun 'wine' and assigns a value to it on a measure scale calibrated in liters.

Theories of the mass/count distinction suggest that languages have grammatical classifiers only if they have no number morphology. Thus, count nouns and grammaticalized classifiers should be in complementary distribution (e.g., Borer 2005; Chierchia 2010). Khrizman (2016) shows that this complementarity does not hold in Russian. In addition to number morphology, Russian has three grammaticalized classifiers *štuka* 'item', *čelovek* 'person', and *golova* 'head', which optionally occur in numeral constructions with plural, see (16).

(16) pjat' (štuk) jaic
five item.GEN.PL egg.GEN.PL
'five eggs' (Russian; Khrizman 2016)

According to Khrizman (2016), such classifiers differ from Chinese-type individual classifiers and should rather be analyzed as a special class of measure words.

They denote functions that map quantities of entities onto the value on a scale calibrated in natural units in the sense of Krifka (1989; 1995).

4.2 Diminutive suffixes as classifiers

So far we have characterized classifiers that are morphologically free morphemes. However, in some languages the classifying function can also be performed by suffixes as bound morphemes. As de Belder (2008) shows, the diminutive suffix in Dutch turns mass nouns into count nouns, hence it functions as a classification device, yet it is compatible with overt morphological plural marking, see (17).

(17) veel brod-je-s
many bread-DIM-PL
'many rolls' (Dutch; de Belder 2008: 2)

In Russian, diminutive suffixes such as *-ka* may also perform a classifier function if combined with a mass noun, see (18).

(18) a. železo – železka – dve železki
iron iron.DIM.F two iron.DIM.PL
'iron – a piece of iron – two pieces of iron'

b. šokolad – šokoladka – dve šokoladki
chocolate chocolate.DIM.F two chocolate.DIM.PL
'chocolate – a bar of chocolate – two bars of chocolate' (Russian)

In (18), *-ka* has a function identical to the function of unit classifiers in Chinese. First, it turns an uncountable noun into a countable one: while *železo* and *šokolad* are mass nouns, *železka* and *šokoladka* denote countable units, which are compatible with numerals and plural formation. Second, being a suffix, *-ka* has the status of a grammatical morpheme. Third, besides determining countability, *-ka* also triggers a gender shift of the noun: the noun becomes feminine. This feature qualifies *ka-* for being a syntactic functional head, the Classifier head.

Khrizman (2021 [this volume]) addresses other formations with the suffix *-ka*, complex numerical measure nouns in Russian such as *stogrammovka* 'a 100-gram glass' or *dvuxlitrovka* 'a two-liter-jar'. In colloquial Russian, such morphologically complex nouns are productively constructed out of a numeral and a measure noun as shown in (19).

(19) sto- grammov- ka vodki
hundred.NOM- gram.GEN.PL- ka vodka.GEN
'a 100-gram glass of vodka' (Russian; Khrizman 2021 [this volume])

Khrizman shows that complex measure nouns with *-ka* are count nouns as they can be pluralized and modified by numerals. Such measure nouns denote containers, i.e., actual objects. For example, *stogrammovka* in (19) refers to objects which weigh 100 grams. The nature of the object is determined by context (a 100-ml bottle/tube, a 100-gram package/bar etc.). Khrizman analyzes such nouns within Rothstein's (2017) theory of counting and measuring. This approach treats complex measure nouns as predicates denoting sets of discrete entities with certain measure properties, e.g. properties of having a value on a dimensional scale calibrated in certain units. For instance, *stogrammovka* denotes a set of disjoined entities (jars, bottles etc.), which have the property of having the value 100 on a weight scale calibrated in gram units. The suffix *-ka* in the formation of measure nouns contributes a shift from a measure interpretation to a container interpretation, thus its function is similar to container nouns (e.g. glass).

Khrizman's analysis has an important implication for the theory of noun phrases. It has been argued in the literature that all count nouns originate from mass nouns and bare count nouns should be derived from mass nouns via lexically concealed individuating operators (Krifka 1989; 1995; Rothstein 2017; Sutton & Filip 2016). Diminutive suffixes like *-ka* could then be seen as a morphological realization of such operators.

5 NP

Now we move on to the lowest layer of the DP, the NP-layer. What does the head of the NP denote? There has been a surge of interest in this question in the literature that has led to many different views. According to Chierchia (1998), languages vary in what their NPs are able to denote. The syntax-semantics mapping is not universally fixed and, in some languages, nouns can denote kinds (or masses), in others they denote objects, but there are also languages where some nouns denote objects and others denote kinds. This view was questioned in Borer (2005). She argues that the basic interpretation of a noun crosslinguistically is a non-countable interpretation as mass (sometimes also interpreted as kind). A non-countable noun can achieve countability by combining with functional heads in the syntax. This basic idea was further developed by Borik & Espinal (2012; 2015) and applied to Russian in Borik & Espinal (2012). They as-

sume that bare nouns in Russian as in (20) primarily denote properties of kinds of individuals that share the property denoted by the noun. If they occur in an argument position as topics they are interpreted as definite and form a DP that refers directly to a kind.

(20) Slon skoro budet zanesen v Krasnuju Knigu esli na nego ne
elephant soon will listed in red book if on him not
perestanut ochotit'sja.
stop hunt
'The elephant will soon be listed in the IUCN Red List if people don't stop hunting it.' (Russian; Borik & Espinal 2012: 137)

Syntactically, the kind-referring DP has the simple structure in (21a). Borik & Espinal argue that kind-denoting nouns are definite and numberless. In their syntactic structure, D is the locus of the iota operator. If the bare noun is used to refer to a concrete individual as in (22), it must be shifted into the object domain and receive number. This shift from kinds to objects is performed by the realization operator ʀ of Carlson (1977). ʀ is specified by number in NumP, see (21b). No NumP is involved in the composition of a definite kind interpretation.

(21) a. $[_{DP}$ D $[_{NP}$ N$]]$ kind
b. $[_{DP}$ D $[_{NumP}$ NUM$_{[-PL]}$ $[_{NP}$ N$]]]$ individual object

(22) Slon podošel k vode.
elephant came to water
'The elephant came to the water.' (Russian)

Kwapiszewski & Fuellenbach (2021 [this volume]) use the work of Borik & Espinal as the point of departure for their analysis of the DP-structure in Polish. They argue that bare noun counterparts of *slon* in (20) are definite and numberless in Polish, just as in other languages. Following Borik & Espinal, the authors assume that bare NPs in Polish denote properties of kinds, which must be bound by the iota operator in D to license direct reference to kinds. Number projection is not available in their syntactic representation. In noun phrases referring to object instances of kinds as in (22), the number projection is available and it is responsible for the derivation of individual instances of kinds.

However, Kwapiszewski & Fuellenbach show that Borik & Espinal's approach is incompatible with the theory of intersective kind modification by McNally & Boleda (2004), who analyze modifiers such as *Bengal* in (23) as intersective

modifiers of kinds. Since Borik & Espinal consider nouns to be singleton sets of kinds, such a treatment of modification is impossible.

(23) Tygrys bengalski jest na skraju wymarcia.
tiger.NOM Bengal.M is on verge extinction.GEN
'The Bengal tiger is on the verge of extinction.'
(Polish; Kwapiszewski & Fuellenbach 2021 [this volume])

To solve this problem, the authors introduce a subkind operator (SK) into the semantics and link it to the functional head Classifier in the syntax. Thus *tygrys* 'tiger' in (23) has the following structure:

(24) $[_{DP}$ +DEF $[_{NumberP}$ −PLURAL $[_{ClassifierP}$ SK $[_{NP}$ tygrys $]]]]$ subkind reading

Kwapiszewski & Fuellenbach assume that *tygrys* in (24) refers to a subkind rather to an object, the classifier head is specified as a SK. Thus, the classifier head can have different functions: deriving subkinds of a kind by the SK or deriving object instances of a kind by the realization operator (R). The authors propose the following structure for definite object-denoting and subkind-denoting NPs in Polish:

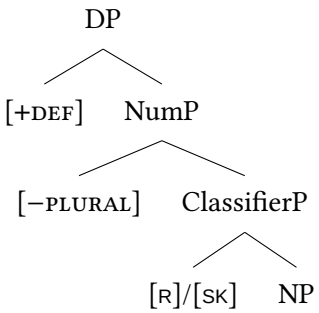

Figure 2: The structure of a DP in Polish (Kwapiszewski & Fuellenbach 2021 [this volume])

If the SK is introduced in the classifier head, the NP denotes a set of subkinds and a kind-modifying adjective such as *bengalski* 'Bengal' can intersectively modify the subkinds. All in all, this work substantiates the assumption of the functional layers DP, NumP, and ClassifierP besides NP in Polish.

6 Conclusions

To conclude, the contributions in this volume address different theoretical issues which have been under controversial discussion in the literature. The contributors develop and improve the theory of NP structure, relativize some previous assumptions, and show how languages without articles specify the NP structure, assumed to be universal in natural language. The main findings can be summarized as follows:

- Although prenominal possessive adjectives in Russian are not determiners, they have been assumed to be placed in the high DP-domain if the NP occurs in an argument position. Since NPs with possessives can also occur in predicate positions, where referential DPs are normally excluded, the question arises whether the possessive is hosted lower in the structure in this case. Alternatively, it can be assumed that possessives are always integrated low in the NP, see Gepner (2021 [this volume]). Under this analysis, the exhaustive interpretation of the NP with possessive in an argument position requires a different explanation. These two analyses should be compared in future research.

- Generally, weak and strong definiteness has been assumed to correspond to anaphoric vs. situational uniqueness, respectively. The example of Czech shows that the boundary between the two types of definiteness may alternatively lie within situational uniqueness dividing situational uniqueness into accidental and inherent uniqueness, see Šimík (2021 [this volume]).

- Languages without articles have been assumed to express definiteness by topicality. However, definiteness contributed by topicality seems to be different from definiteness contributed by the definite article in languages that have it. While topicality indicates familiarity, the definite article indicates uniqueness, see Seres & Borik (2021 [this volume]).

- In the formation of collectives in Polish, we have to distinguish between two types with respect to the accessibility of its members: set collectives formed of collective numerals and atom collectives formed of collective nouns such as *group*. While the individual members of the set collectives are at least weakly accessible, the members of the atom collectives are completely inaccessible and atomic from the outside. The binominal *každý* is sensitive to this distinction, see Dočekal & Šimík (2021 [this volume]).

- The nominalizing suffix *-ka* in Russian, also used as a diminutive suffix, can serve as a classifier turning non-countable expressions such as measure expressions but also mass nouns into countable nouns. This function renders it similar to classifiers in Chinese, see Khrizman (2021 [this volume]).
- Nouns in articleless Slavic languages, in particular Polish, can be analyzed as being numberless and denoting properties of kinds. They can refer to a kind if combined with a iota operator in D. But they can be turned into object level denotation or subkind denotation by the classifier head and then be combined with a numeral in NumP, see Kwapiszewski & Fuellenbach (2021 [this volume]).

The workshop contributors present their generalizations and analyses developed for single languages: Russian, Polish, or Czech. Future research should show whether these generalizations extend to other Slavic languages as well and what implications this has for the theory of the universal structure of NPs.

Abbreviations

CL	classifier
DET	determiner
DIM	diminutive
F	feminine
GEN	genitive
INS	instrumental
LOC	locative
M	masculine
NOM	nominative
PL	plural
PRS	present
PST	past
SG	singular
1	first person
3	third person

Acknowledgments

I am grateful to the organizers of the FDSL 13 conference in 2018 in Göttingen, especially Uwe Junghanns, for giving me the opportunity to hold the workshop on the semantics of noun phrases. The research for this paper was funded by the German Research Foundation (DFG), via the project grant number GE 2136/3-1, project "The fine structure of the Russian noun phrase: A comparative perspective" (https://gepris.dfg.de/gepris/projekt/445439335).

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