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Prepositions as category-neutral roots*

1 Introduction

This paper is concerned with the categorial status of prepositions in Slavic languages. According to existing classifications of lexical categories, both prepositions and adjectives¹ are ‘natural-born’ modifiers (cf. Wunderlich 1996: 15; Steinitz 1997: 11), contrary to the referential(ly independent) (see Déchaine 1993; Wunderlich 1996) categories of nouns and verbs. The Russian examples in (1) and (2) contain such modifiers:²

- (1) *turist-y* [PP *iz* [NP [AP *zapadn-yx*] *stran-∅*]] (Rus)
 tourist-NOM.PL from western-GEN.PL country-GEN.PL
 ‘tourists from Western countries’
- (2) [A(dv)P *sročn-o*] *obрати-t’sja k ...*
 urgent-ADV turn-INF-REFL to
 ‘(to) urgently turn to ...’

Despite the fact that adjectives and prepositions share the basic function of modifiers,³ their Slavic exponents display obvious differences: First,

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¹ Different from Wunderlich (1996: 4), I apply the term adjective exclusively to forms marked for agreement (e.g., Russian *ostorožn-uju* ‘careful-ACC.SG.F’). As concerns non-inflecting (manner) adverbs derived from adjectival stems/roots (like Russian *ostorožn-o* ‘carefully’), I follow Alexeyenko (2015: 93–100) who analyzes them as prepositional phrases with a null head that semantically links manners to the event structure, thus yielding equivalents of *in a(n) A manner*-adverbials. I am grateful to an anonymous reviewer for bringing this to my attention. See footnote 8 for further details.

² The label ‘NP’ used here and elsewhere in the paper does not imply any theoretical stance as to whether Russian or other Slavic languages have a functional category ‘D’. Both NPs and DPs are fine with me.

³ The possible use of adjectival and prepositional phrases as predicate expressions does not contradict the claim that they have the same basic function of modifiers. Thus, according

adjectives inflect, whereas prepositions do not. Second, adjectives are purely lexical, whereas prepositions seem to oscillate between lexical and functional elements (cf. Abney 1987: 63). These differences form the crucial motivation for this paper, which seeks to eliminate two corresponding asymmetries obtaining in all existing classifications of lexical categories.

One step to achieve this goal will be to deny prepositions the status of a lexical category. But I will go further and deny them a category altogether. Instead, prepositions will be analyzed as category-neutral roots that neither can nor have to be integrated in any classification of categories whatsoever. One consequence of this removal is that adjectives remain the only designated modifiers within the system of lexical categories in Slavic languages, a system that, after the removal, consists of inflected categories only (Section 3). Prepositions, on the other hand, are category-neutral roots that express certain semantic relations and select some case feature on their complement (Section 4.1). Thus, they serve as modifiers of a given referent by relating it to their internal argument. But having no category, they are free from category-related syntactic restrictions (Section 4.2). Finally, I suggest that, if such a relational root head is phonetically empty, we deal with what is commonly referred to as semantic case (Section 4.3).

Although I confine myself to data from the three Slavic languages Czech, Polish and Russian, I suggest that the following – in part admittedly programmatic – assumptions are applicable to Slavic languages in general. The main benefit of my proposal lies in the possibility to explain the specific (and relatively unrestricted) behavior of prepositions and prepositional phrases in Slavic languages without resorting to a special(ized) lexical or functional category.

2 Existing classifications of lexical categories

The most common classification of lexical categories in Generative Grammar is depicted in Table 1.⁴ It makes use of two features, [N] and [V], with two

to Bowers (1993: 595), a predicative XP can be of any of the four lexical categories V, A, N or P, and following Steinitz (1997: 11), the predicative position is neutral as concerns categorial information. It seems that any 1-place predicate expressing a semantic property is allowed to appear in predicative position, irrespective of its inherent characteristics.

⁴ This classification is usually attributed to Chomsky (1970). However, Steinitz (1997: 3) claims that this attribution is mistaken. Since she does not mention an alternative source, I will continue to use the traditional reference.

possible values each, ‘-’ and ‘+’. The possible combinations of [\pm N] and [\pm V] give rise to four lexical categories that are explicitly considered linguistic universals (cf. Steinitz 1997: 3).

	N	V
Preposition (P)	-	-
Verb (V)	-	+
Noun (N)	+	-
Adjective (A)	+	+

Table 1. The [V,N]-classification (Chomsky 1970).

But this classification runs into a number of serious problems. The following list is compiled from Wunderlich (1996: 4–5) and Steinitz (1997: 3).

- The features [N] and [V] lack independently motivated content. Attempts to define their substance have mostly been *ad hoc* and inconsistent.
- The empirically well-founded existence of two natural classes, N/V vs. A/P (see Wunderlich 1997: 33), cannot be modelled. Most importantly, noun-verb and verb-noun derivations require a maximal change of feature values, which is implausible. Moreover, the classification does not offer an explanation for the fact that there is an asymmetry between V-N and N-V derivations in many languages of the world “display[ing] a variety of V-N derivational affixes but are relatively poor concerning N-V derivational morphology” (Wunderlich 1996: 21).
- Data from extra-European languages, which exhibit systematic gaps in the inventory of lexical categories (for example, Chinese lacking adjectives and prepositions as distinctly marked categories), cast doubt on whether the four categories A, N, P, V are indeed linguistic universals.
- Finally, considering markedness theory, the features [\pm N] and [\pm V] turn out to be useless, since there is no empirical motivation or theoretical justification to treat prepositions as the least marked of lexical categories.

With special respect to ‘richly inflected’ – among them Slavic – languages, at least two more points of criticism arise:

- There is no mention of adverbs, though their form differs from the one of adjectives both in case of derived adverbs (e.g., Czech *dobř-e* ‘well’, *možn-o* ‘possibly’; Polish *szerok-o* ‘widely’, *źl-e* ‘badly’; Russian *čast-o* ‘often’, *vyšok-o* ‘highly’, etc.) and underived adverbs (e.g., Czech *tam*

‘there’, *včera* ‘yesterday’; Polish *dziś/dzisiaj* ‘today’, *już* ‘already’; Russian *očen* ‘very’, *počti* ‘almost’, etc.).

- The [N,V]-classification involves an asymmetry as it contains three inflected (A, N, V) as opposed to only one non-inflected category (P).⁵

I will return to the last-mentioned points below.

To overcome the problems of the [N,V]-classification, Wunderlich (1996) suggests an alternative introducing the features [\pm dep] and [\pm art]. Accordingly, elements specified [+dep] (‘referentially dependent’) lack a referential argument, while items specified [+art] are claimed to have an ‘articulated argument structure’ (including a ‘more complex’ referential argument if there is such an argument; cf. Wunderlich 1996: 6). The author gives the summaries in Tables 2 and 3 to show what properties of lexical items are established by the possible feature specifications of [\pm dep] and [\pm art], respectively:

	[-dep]	[+dep]
Is affected by functional categories	yes	no
Arguments can be anchored in a nonlinguistic context	yes	no
Can be used in an independent utterance	yes	no
Primarily functions as a modifier	no	yes
Must exist in all languages	yes	no

Table 2. Values of [\pm dep] and correlating properties (Wunderlich 1996: 15).

	[-art]	[+art]
Has obligatory arguments	no	yes
Takes morphological case	yes	no
Can function as the head of compounds	yes	no

Table 3. Values of [\pm art] and correlating properties (Wunderlich 1996: 23).

These considerations give rise to the alternative classification of lexical categories in Table 4:

⁵ There are instances of so-called inflected prepositions/postpositions described in, e.g., Scottish Gaelic, Hungarian, Czech and Polish. These, however, arise from the contraction of prepositions/postpositions with agreement markers (usually clitic or suffixal personal pronouns). A prepositional Polish example is *na-ń* (on-3SG;M/N) < *na niego* ‘on him/it’; a postpositional Hungarian example is *benn-ed* (in-2SG) ‘inside of you’ (cf. Trommer 2008).

	dep	art
Noun	–	–
Verb	–	+
Adjective	+	–
Pre-/Postposition ⁶	+	+

Table 4. The [dep,art]-classification (Wunderlich 1996: 6).

Thus, Wunderlich (1996) makes the following theoretical gains:

- ‘Verbiness’ and ‘nouniness’ receive substantial interpretations: Both involve the presence of a referential argument, but only verbal items have an articulated argument structure, which means that their possible individual arguments are obligatory, and that their referential argument is more complex (as it relates to worlds) than the one of nouns.
- N/V and A/P form natural classes in terms of being specified [–dep] or [+dep], respectively, the latter class being more marked than the former. Additionally, Wunderlich’s classification explains the above-mentioned asymmetry between (many) V-N and (few) N-V derivations observable in many languages: While the former involve a ‘simplification’ from [+art] to [–art] (suppression of information), the latter require a ‘complication’ from [–art] to [+art] (addition of information).
- Concerning the question of universals, Wunderlich concludes that the feature [±art] must be instantiated in every language, while the feature [±dep] need not. As a consequence, N and V turn out to be major lexical categories, while A and P are minor categories. By resorting to the notion of underspecification, Wunderlich is able to explain systematic gaps occurring in some languages by claiming that they do not instantiate the feature [±dep].
- N is the least marked category, whereas P turns out to be the most marked category. This order accounts for a number of empirical observations in a more plausible way than the one following from the [N,V]-classification.⁷

⁶ Wunderlich “use[s] the term ‘preposition’ to cover both prepositions and postpositions as well as adverbs that are inherently relational and occupy the same syntactic positions as PPs (such as down, upwards, then, yesterday)” (Wunderlich 1996: 4). See footnote 8 for further discussion of the last-mentioned claim.

As to the two afore-mentioned additional problems concerning adverbs and prepositions, Wunderlich tries to solve the first one by stating that “A’s functioning as adverbs need not be subject to any finer categorial distinction” (Wunderlich 1996: 4). Accordingly, both adjectives and adverbs are A-items, so that there is no need for an extra category ‘Adv’ even in case there is a special adverb marking element as, e.g., English *-ly*.⁸ Regarding Slavic languages, the difference between adjectives and adverbs is based on their morphological marking, which comprises a full set of agreement features in case of adjectives, while the adverb marker *-o/-e* indicates the absence of category (and agreement) in case of derived adverbs. Finally, underived adverbs lack a special marker altogether. Examples from Czech, Polish and Russian are given in (3)–(5):

⁷ “[N]ouns are the most productive class in lexical extensions, they exhibit both the greatest number and the greatest sortal variation, and most lexical items of the major categories can be made into nouns. Moreover, nouns can be the argument of items in all categories [...]. In contrast, prepositions are most marked, which is in accordance with the fact that items belonging to this class easily shift between predicate expressions and particles that, for instance, function as case markers.” (Wunderlich 1996: 6) While I agree with Wunderlich as concerns nouns, I do not see in how far the mentioned properties of prepositions speak in favor of treating them as the most marked among lexical categories. See footnote 25 on prepositions as case-markers.

⁸ “Adverbs such as *slow-ly* are classified as adjectives that are morphologically marked as modifiers of verbs and thus project to VPs.” (Wunderlich 1996: 4) While this view can in principle be applied to Slavic derived adverbs in *-o/-e*, it does not extend to underived adverbs like Russian *očen* ‘very’, *včera* ‘yesterday’ or *tam* ‘there’. Recently, Alexeyenko (2015: 93–100) proposes manner adverbs to be PPs headed by a silent head semantically linking manners to the event structure. Under this view, Slavic derived adverbs as Russian *ostorožn-o* ‘carefully’ are PPs. If underived adverbs are analyzed as P(P)s as well, the diverse types of adverbs can be given a uniform analysis. Note that Wunderlich (1996: 16) and Reyle, Rossdeutscher & Kamp (2007: 580) analyze deictic/relational adverbs (e.g., Polish *dziś* ‘today’, Russian *tam* ‘there’) as prepositions with an implicit internal argument. Under the view that prepositions are category-neutral, the mentioned assumptions amount to the claim that both derived and underived adverbs are category-neutral.

A reviewer asks how adverbs can, then, be distinguished from prepositions. A possible answer is that a distinction in terms of categorial features might be superfluous since the relevant items differ sufficiently in their semantic content/type and argument structure. While, for example, the Czech ‘preposition’ *v* ‘in’ has local relational semantics plus an open slot for an internal argument, the ‘adverb’ *tam* ‘there’ has (roughly) the same local meaning (‘in’), but comes with an implicit internal argument (‘that place’). Thus, whereas ‘adverbs’ are self-sufficient, ‘prepositions’ need to be complemented before they can be used as adverbial modifiers. An additional categorial distinction seems unnecessary.

- (3) a. **dobr-á** profesor-k-a (Cze)
 good-NOM.SG.F professor-FEM-NOM.SG.F
 ‘good (female) professor’
- b. **dobř-e** zpíva-t
 good-ADV sing-INF
 ‘(to) sing well’
- c. Petr-a **už** v-í
 P.-NOM.SG.F already;ADV know-3SG
 ‘Petra already knows’
- (4) a. **smaczn-e** papieros-y (Pol)
 tasty-NOM.PL cigarette-NOM.PL
 ‘tasty cigarettes’
- b. **smaczn-ie** wygląda-ć
 tasty-ADV look-INF
 ‘(to) look tasty’
- c. **dziś** pad-a
 today;ADV rain-3SG
 ‘today it is raining’
- (5) a. **siłn-oe** piv-o (Rus)
 strong-NOM.SG.N beer-NOM.SG.N
 ‘strong beer’
- b. **siłn-o** doverja-t’
 strong-ADV trust-INF
 ‘(to) trust strongly’
- c. **včera** ona uexa-l-a
 yesterday;ADV she-NOM leave-PAST-SG.F
 ‘yesterday she left’

But Wunderlich’s (1996) classification, designed as a cross-linguistic typological device with inflectability not being a constituting feature, does not overcome the asymmetry between inflected and non-inflected categories, at least when applied to languages explicitly differentiating adjectives from adverbs. As the latter applies to Slavic languages, I conclude that inflectability plays a crucial role for defining their lexical categories. Accordingly, I suggest removing P from Wunderlich’s system, leaving a homogenous set of inflected categories (see Section 3).

Needless to say, Chomsky (1970) and Wunderlich (1996) are not the only existing theories of lexical categories. Wunderlich himself mentions alternative classifications by Jackendoff (1977), Bresnan (1982), Hengeveld (1992), Déchaine (1993), Hale & Keyser (1995) and Steinitz (1995, 1997). I will not go into these proposals since all of them resemble Wunderlich's (1996) account in assuming the 'classical' four lexical categories A, N, P, V.⁹ A notable exception is Baker (2003) whose system of lexical categories consists of A, N, V only, but who considers P a functional category (cf. Baker 2003: 303–325). I will follow him as concerns the former three categories, but will take a different position with respect to 'prepositions'.

3 A reduced classification of lexical categories

While I follow existing theories with respect to the lexical categories A, N and V, my own account deviates from them in that it does not involve a fourth category (equivalent to) 'P'. This reduction yields a classification with only three categories (A, N, V) which I continue to construe by means of Wunderlich's features [\pm dep] and [\pm art].¹⁰ Importantly, the emerging reduced set of categories is coextensive with the set of inflected categories in Slavic languages. Thus, the removal of 'P' eliminates the asymmetry of inflected and non-inflected categories present in other classifications; cf. Table 5:

	dep	art
Noun	–	–
Verb	–	+
Adjective	+	\pm

Table 5. The [dep,art]-classification without 'P'.

⁹ Brief descriptions and discussions of these accounts can be found in Wunderlich (1996: 8–10). A rather different position is taken by Zimmermann (1988a, 1988b) who speaks in favor of an extension of the feature inventory to enable a more fine-grained distinction of lexical categories. Typological work relating to the topic includes, among many others, Sasse (1988, 1992, 1993), Bok-Bennema (1991), Broschart (1991, 1997), Gasde (1993).

¹⁰ The use of binary features in the reduced classifications in Tables 5 and 6 may give rise to the question why there is no instantiation of the combinations [+dep,+art] and [–V,–N], respectively. A possible answer wrt Table 5 is that there is simply no distinct combination to be instantiated because '[art]' is un(der)specified for adjectives. As concerns Table 6, one might claim that entirely negative specifications can in general not serve to define a category. Note that the question does not arise at all when using privative features.

Without P, adjectives are the only remaining referentially dependent category among lexical – and likewise inflected – categories. As a consequence, [+dep] is sufficient to distinguish adjectives from both nouns and verbs. It follows that [±art], the value of which is crucial to distinguish nouns from verbs, has no primary relevance for adjectives as it is underspecified.¹¹ Their referential dependence confines adjectives to the function of modifiers of the referentially independent categories. In Slavic languages, adjectival roots or stems can be attached an inflectional marker encoding a full set of nominal agreement features (e.g., Czech *dobr-ému* ‘good-DAT.SG.M/N’), thus creating NP-modifiers. As an alternative, A-roots/stems can be attached one the suffixes *-o* or *-e* (in Czech also *-y*) seemingly indicating the absence of (nominal) agreement (cf. Czech *dobř-e* ‘well’, Russian *ostorožn-o* ‘carefully’), but in fact yielding category-neutral forms to serve as adverbial modifiers (see footnotes 1 and 8).

The removal of P from the system of lexical categories is in stark contrast to, e.g., Chomsky (1970) or Fukui (1986) who treat prepositions unequivocally as lexical items. However, the claim that prepositions are not lexical is not new. For example, Grimshaw (1991) suggests P to be a functional category, although she adds that it differs from other functional categories in showing the property of s-selection (cf. Grimshaw 1991: 41).¹² Baker (2003) excludes prepositions from his system of lexical categories, which consists exclusively of verbs (categories licensing subjects), nouns (categories with a referential index) and adjectives (neither verbs nor nouns). A fine-grained analysis is put forward by Rauh (1997) who divides English prepositions into three groups: (i) lexical prepositions (Rauh 1997: 140–147), (ii) governed prepositions (Rauh 1997: 147–153) and (iii) grammatical prepositions (Rauh 1997: 153–157). Accordingly, the members of group (i) display properties of truly lexical items, while the members of group (ii) are

¹¹ Indeed, there are adjectives with an articulated argument structure, i.e., with an internal in addition to their external argument (cf. Wunderlich 1996: 16). Moreover, “A’s may be relational in that they have a degree argument, thus allowing comparison with other instances” (Wunderlich 1996: 16). These facts suggest that the value of [±art] is indeed not fixed in case of adjectives. An advantage arising from the removal of ‘P’ is that it does not have to be fixed as in Wunderlich’s (1996) original proposal with four lexical categories.

¹² Grimshaw suggests that predicates bear features selecting for the semantic type of their complements (‘s-selection’; cf. Grimshaw 1979). In her theory, s-selection is separate from syntactic subcategorization (‘c-selection’) since different categories may very well share the same semantic type. I would like to add that, apart from semantic type, it is also relevant whether the combination of a given predicate and its complement expression yields a sensible result at the level of interpretation (LF).

functional and correspond to what Grimshaw (1991) claims about prepositions in general. The members of Rauh’s third group show properties of both lexical and functional elements; Rauh (1997: 156–157) suggests them to be the result of a grammaticalization process. A likewise ‘ambivalent’ position is taken by Mardale (2011) claiming prepositions to be a semilexical category. In place of a summary of this state of affairs, one might cite Abney (1987: 63), who notes that “P seems to straddle the line between functional and lexical elements, one might wish to treat it as unspecified for $[\pm F]$.”¹³

My own account takes up this wish, although my interpretation of the term ‘unspecified’ is rather radical: I suggest that prepositions have no category at all. As a consequence, it is both impossible and unnecessary to decide whether the nature of these items is lexical or functional. Since they are ‘nameless’, they do not (have to) fit in either class. The implications of this claim will be discussed in Section 4.

It is worth noting that the present account finds unexpected support from the initially discussed [N,V]-classification. Recall that it treats prepositions as completely unmarked. Aside from its incompatibility with markedness theory, one may interpret this negative specification in such a way that prepositions are items without morphosyntactic qualities, which is in fact equivalent to saying that they have no category at all. But still, the [N,V]-classification lists prepositions as one of four universal lexical categories. What if we remove P from this classification, too? The result is depicted in Table 6:

	N	V
Verb	–	+
Noun	+	–
Adjective	+	+

Table 6. The [V,N]-classification without ‘P’.

Accepting the theoretically unsatisfying notions of ‘verbiness’ and ‘nouniness’ for the time being, this reduced classification is one in which each category is either verbal or nominal or both of it. As a result of the removal of P, the earlier problem of a ‘category without qualities’ does not arise. Moreover, all members of this classification are inflected categories, with the result that there is no asymmetry. It seems that the removal of prepositions is advantageous not only if applied to Wunderlich’s (1996), but

¹³ Abney (1987: 59) uses ‘ $[\pm F]$ ’ to distinguish the lexical from the functional domain.

also to Chomsky's (1970) classification. This indicates that the present idea is worth exploring.

To sum up, items that have so far been classified as 'P' (and have thus been classed with either lexical or functional categories), will in the present account be analyzed as category-neutral roots. As a consequence, they cannot, and do not have to, be part of any classification of categories whatsoever. On the other hand, there are no principled restrictions to ban them from the lexical or functional domain.¹⁴ In other words, they are – by virtue of being 'nameless' – on a different level and 'freer' than categorized items. Put still differently, "P's are generally licensed in adjunct positions if they are sortally adequate" (Wunderlich 1996: 4).

4 Prepositions as category-neutral roots

My proposal is that prepositions have no category, hence are category-neutral roots, viz. items uncategorized both in the mental lexicon (cf. Marantz 1997) and when appearing as syntactic heads. The lexical entries of such roots are deficient in that they lack categorial features. In syntax, they project label-less adjuncts¹⁵ that are, due to their 'namelessness', not affected by feature-based syntactic operations in the way categorized projections are. Put differently, category-neutral roots project category-neutral phrases that are on a 'separate plane' (Chomsky 2004: 117–118; cf. Oseki 2015: 303) as compared to categorized projections (APs, NPs, VPs – forming the 'primary plane').

In what follows, I will discuss the properties of category-neutral roots in more detail, starting with their representation in the mental lexicon in Section 4.1. In Section 4.2, I will consider their syntactic behavior. Finally, I will

¹⁴ Category-neutral roots often occur as markers of grammatical relations. Thus, in Bulgarian and Macedonian, some prepositions have assumed the function of case markers. An example is Bulgarian *na* expressing genitive and dative relations (see also footnote 25). Apart from that, prepositions also appear as subjunctions introducing adverbial clauses (usually accompanied by a correlate). Examples are Czech *protože* 'because'; Polish *zanim* 'before'; Russian *vvidu togo čto* 'in the view of', etc.

¹⁵ There are two exceptions when the projections of the relevant category-neutral roots are no adjuncts, namely (i) in predicative position (see footnote 3), and (ii) when they are idiosyncratically governed by certain lexemes (e.g., Czech *doufat v* ACC 'hope for'; Polish *cieszyć się z* GEN 'be pleased with'; Russian *uverennyj v* LOC 'confident of'). It seems that the lexical entries of such lexemes include/prescribe a specific prepositional root. On the other hand, the range of 'prepositional' complements that combine with verbs of motion may simply follow from basic spatio-temporal concepts and world-knowledge.

suggest that the underlying syntactic structure of the category-neutral modifiers in question is identical to the one of so-called semantic cases in Section 4.3.

4.1 Category-neutral roots in the lexicon

In order to compare category-neutral roots with categorized lexical items, it is necessary to state a minimum of theoretical assumptions with respect to lexical entries. Following Bierwisch (1983, 1996, 1997, 2007, 2009), Wunderlich (1997) and Zimmermann (1992, 2013), a.o., I assume that lexical items are stored in the mental lexicon in the form of lexical entries. These consist of four blocks of information: Phonetic Form (PF), Grammatical Features (GF), Argument Structure (AS) and Predicate-Argument Structure (PAS). An example of a lexical entry with these four components is shown in (6), which is entry (71c) for the German verb stem *leer*- ‘empty’ in Wunderlich (1997: 59):

- (6) PF /le:r/
 GF V
 AS $\lambda z \lambda x \lambda s$
 PAS CAUSE(X,BECOME(EMPTY(Z)))(S)

A lexical entry of this form unifies phonetic, grammatical (categorial and morphosyntactic), argument-structural and semantic information about the respective lexical item. Category-neutral roots, on the other hand, lack categorial features. Such roots are common in the framework of Distributed Morphology (DM) (see, a.o., Halle & Marantz 1993; Marantz 1997; Embick & Noyer 2004). In DM, lexical categories are analyzed as arising from category-neutral roots ($\sqrt{\quad}$) that are combined with some category-defining functional head (F) as depicted in (7) (from Alexiadou, Haegeman & Stravrou 2007: 491):¹⁶

- (7) [_F F $\sqrt{\quad}$]

Another crucial claim of DM is that category-neutral roots must be categorized in the course of derivation:

¹⁶ The linear ordering of the root and the functional head may vary. Thus, e.g., Haselbach & Pitteroff (2015) analyze prepositions as arising from the underlying structure [_p $\sqrt{\quad}$ p].

“Roots cannot appear without being categorized: Roots are categorized by combining with category-defining functional heads.” (Embick & Noyer 2004: 5)

From these assumptions, I will only adopt the one of category-neutral roots. As for the rest, I will continue to resort to the framework outlined in the above-mentioned works of Bierwisch, Wunderlich and Zimmermann. Accordingly, I suggest that the mental lexicon of Slavic languages comprises both (inherently) categorized and category-neutral roots. Furthermore, I propose that categorized roots can be of one of the three lexical categories A, N or V (see Section 3). Prepositions, on the other hand, are category-neutral. It follows that I disagree with Embick & Noyer’s (2004) view according to which category-neutral roots cannot appear without being priorly categorized. Crucially, my claim is that prepositional roots (much like underived adverbs) lack a category at any level of derivation, i.e. both in the mental lexicon and in syntax. Importantly, the latter does not prevent them from projecting. As a consequence, the peculiarity about ‘prepositional’ phrases is that they are really phrases without a label.

In essence, this means that the lexical entries of prepositions are deficient as compared to entries of categorized lexical items (A, N, V) in that they lack categorial features. I illustrate this by means of the lexical entry of Russian *u* ‘at’ in (8):¹⁷

- (8) PF /u/
 GF
 AS $\lambda y_{[GEN]} \lambda x$
 PAS LOC(X,AT(Y))

There are no categorial features in (8). As for the rest, *u* relates an individual in the local vicinity of another individual. Additionally, *u* requires its internal argument expression to be in genitive case.¹⁸ This particular example is sufficient to demonstrate the core properties of prepositions: They have no category, they “are relational by their very nature” (Wunderlich 1996: 16) and they are, as a consequence, “typically 2-place predicates” (Wunderlich 1996:

¹⁷ See, a.o., Bierwisch (1988) and Haselhoff & Pitteroff (2015) for fine-grained analyses of (local) prepositions.

¹⁸ Subcategorization is represented by annotations on λ -positions in the AS of lexical entries (cf. Bierwisch 2009: 284; Zimmermann 2003: 219; Pitsch 2015: 56). This way of representation reflects the view (i) that AS is the interface between lexicon and syntax, and (ii) that selectional features are part of AS rather than GF. In other words, while the GF of a lexical item encode information about that item itself, annotations on λ -positions impose conditions on the form of its argument expressions.

15).¹⁹ What makes them ideal modifiers is their relational meaning. Syntactically, they are adjuncts. A crucial claim of my analysis is that the licensing of adjuncts does not depend on their category, but exclusively on their logical type and descriptive meaning (see also Johnston 1994: 39). In the same vein, Wunderlich (1996: 4) writes that “A’s and P’s are generally licensed in adjunct positions if they are sortally adequate”. Here, we see a parallel between prepositions and adjectives. However, it is crucial that Slavic A’s are restricted to specific syntactic environments due to their obligatory morphological marking, whereas prepositional items are non-inflected and, thus, unrestricted by morphosyntactic features and mechanisms such as agreement or concord.

4.2 Category-neutral roots in syntax

Provided that prepositions lack categorial features, they can only be generated as syntactic heads without a category. In the absence of categorial features – being the prerequisite for a syntactic label – prepositional heads as well as their projections cannot be represented by means of any of the traditional notations. To illustrate that prepositions consist of their form (PF) and meaning (AS plus PAS) only, I will use the respective preposition itself in place of the missing category. It is important to keep in mind that this representation is not a category, but a mere placeholder for the relevant preposition’s properties as stored in its lexical entry.

I continue to use the Russian example *u* ‘at’ from (8). As depicted in (9b), *u* is generated as a head without label and, consequently, projects a label-less phrase represented as ‘*uP*’.²⁰ Thus, prepositions are category-neutral not only

¹⁹ The characterization of prepositions as “relational by their very nature” points to an important semantic difference between prepositions and other relational 2-place predicates, especially verbs, namely that prepositional relations are more ‘prototypical’ or ‘simplex’. Often, they correspond to so-called semantic primes/primitives.

²⁰ Here, ‘*uP*’ follows from X-bar theory and endocentricity. Chomsky (2013) suggests an alternative to get rid of endocentricity. He claims *Minimal Search* (a third factor principle) to be the crucial labeling mechanism. Accordingly, the category of the closest head determines the label of the emerging syntactic object. Provided that prepositions lack a category, a set consisting of a prepositional head and some phrasal complement, for example {*u*,XP}, cannot receive a label, since the head has no category. Note that the XP cannot be the source of the label, since the head is, despite having no category, still a head, and heads win out over phrases. It follows that prepositional phrases will generally end up without a label. This situation may not be as problematic as it seems. Hornstein & Nunes (2008), building on Uriagereka (1998) and Chametzky (2000), analyze adjunction

according to their lexical entries and as syntactic heads, but also on the phrasal level. Since *u* is – much like any preposition – a 2-place predicate with relational meaning, it takes an NP-complement saturating its internal argument position and, thus, turning the head *u* of type $\langle e, \langle e, t \rangle \rangle$ into a phrasal expression (*uP*) of type $\langle e, t \rangle$. As can be seen from (9a), the NP-complement is marked with genitive case, obeying the selectional requirements of the root *u* as fixed in its lexical entry in (8) above.

- (9) a. *u moej ljubimoy prepodavatel'nic-y*
 at my favourite female.lecturer-GEN.SG.F
 'at my favourite [female] lecturer'
 b. [_{*uP*} *u*_[*GEN*] [_{NP} *moej ljubimoy prepodavatel'nicy*_[GEN]]]

After applying the semantic rule *Predicate Modification* (Heim & Kratzer 1998: 65), the category-neutral expression of type $\langle e, t \rangle$ in (9b) can be used as a modifier of an expression of the same logical type. In syntax, the *uP* adjoins to the modified phrase. Since *uP* is category-less, there can be no doubt as to which label the resulting structure will bear. In fact, there is only one label available, namely that of the modified phrase. The NP *papirosoy* 'cigarettes' in (10a) serves as an example. The whole adjunction structure including the modifying *uP* from (9b) is depicted in (10b):

- (10) a. *papirosoy u moej ljubimoy prepodavatel'nic-y*
 cigarette-NOM.PL at my favourite female.lecturer-GEN.SG.F
 'cigarettes at my favourite lecturer' \approx 'my favourite lecturer's cigarettes'
 b. [_{NP} [_{NP} *papirosoy*] [_{*uP*} *u*_[*GEN*] [_{NP} *moej ljubimoy prepodavatel'nicy*_[GEN]]]]

Interestingly, Chomsky's (2004: 117–118) idea, according to which unlabeled structures are on a 'separate plane' as compared to labeled structures (see also Oseki 2015: 303), can be adapted to the case at hand: Indeed, prepositional phrases appear to be on a 'separate plane', not only as compared to NPs and VPs, but also to APs. As mentioned before, prepositional phrases and APs are equally modifiers. However, APs are exponents of a lexical and inflected category. As a consequence, although 'inferior' to NPs and VPs in terms of

structures as label-less concatenates to the effect "that adjuncts can so dangle, whereas arguments must be integrated into larger structures via labeling" (Hornstein & Nunes 2008: 66). Given that adjuncts do not (have to) have a label, their heads, too, do not need a category. Note that this view provides another reason why 'PPs' are ideal modifiers: Due to having no label, they can only be adjuncts, and adjuncts are modifiers (see footnote 3 concerning 'PPs' in predicative position).

referential dependence, APs are still part of the same system and manipulated by the same feature-driven syntactic mechanisms. In this respect, APs are on a par with NPs and VPs. In contrast, prepositional phrases (much as adverbs; see footnote 8) do not underlie restrictions arising from categorial (or related morphosyntactic) features, which is why they adjoin to whatever they can modify in terms of sortal adequacy and the appropriate semantic type.²¹ In sum, prepositions are on a ‘separate plane’ from NPs, VPs and APs because they lack a category/label. Put differently, while A’s are ‘natural-born’ modifiers due to their lexical specification ([+dep]) within the system of lexical categories, prepositional roots have the same function (only) due to their relational semantics.

4.3 Category-neutral roots and semantic cases

In what follows, I will first discuss category-neutral projections in some more detail. Subsequently, I will show that the syntax of these structures (involving overt root heads) is identical to that of so-called semantic cases (involving empty root heads). To start with, I give three more examples of Slavic modifiers including overt prepositional heads in (11)–(13):

- (11) **v** pátek-∅ (Cze)
 in Friday-ACC.SG
 ‘on Friday’
- (12) **za** ocean-em (Pol)
 beyond ocean-INS.SG
 ‘beyond the ocean’
- (13) **iz-za** ugroz-y terakt-a (Rus)
 because of threat-GEN.SG terror attack-GEN.SG
 ‘due to the threat of a terror attack’

Just as in the case of the Russian example *u* ‘at’ used before, the bold-face roots in (11)–(13) express semantic relations – a temporal one in (11), a local

²¹ Derived manner adverbs in *-o/-e* (resembling ‘prepositions’ in that they are label-less; see footnote 8) are unable to modify NPs since their external argument is specified as a situation/event argument as the result of their morphological derivation. As a consequence, they can only adjoin to syntactic objects that refer to situations/events, viz. to VPs. Note that this restriction is semantically motivated, while categorial features are irrelevant.

one in (12) and a causal one in (13). Based on these meanings, they present ideal modifiers. Since the roots are category-neutral and non-inflected, they do not impose any principled restrictions on the possible modificandum. The only factor that restricts the distribution of such ‘root modifiers’ is their semantic content. In other words, the relation encoded in the root – and the logical type following from it – is crucial not only for what kind of complement it can combine with, but also for what kind of referent may be modified by the arising phrase.

Examples (11)–(13) also show that the relevant roots – despite their lack of a category – select certain case forms. It follows that their lexical entries include selectional requirements on the morphological form of their internal argument. As an example, the Czech root *v* in (11) selects the accusative case. Generalizing the syntactic representation from (9b), (14) shows the general syntactic format of adjuncts based on category-neutral root heads ($\sqrt{\quad}$):

(14) [XP XP [_{VP} $\sqrt{[*\text{CASE}^*]}$ NP_[CASE]]]

A welcome ‘by-product’ of the present analysis is that it allows us to capture so-called semantic cases in Slavic languages, too. By “semantic case” I understand an inflectional case marker on an NP/DP that “does more than just indicate the surface grammatical function of the DP. The DPs in question are not arguments of the main verbal predicate, so semantic case must connect them with the verb and provide them with a θ -role.” (McFadden 2004: 54) Thus, at first glance, we deal with NPs/DPs – marked with oblique cases – that modify a given expression in an analogous manner as prepositional phrases do. In Slavic languages, a particularly versatile semantic case is the so-called bare instrumental; cf. Russian examples in (15)–(17):

- (15) Ivan- \emptyset šě-l- \emptyset les-om. (Rus)
 I.-NOM walk-PAST-SG.M forest-INS.SG
 ‘Ivan walked through the forest’
- (16) Ivan- \emptyset piše-t karandaš-om.
 I.-NOM write-3SG pencil-INS.SG
 ‘Ivan writes with a pencil’
- (17) Ivan- \emptyset vernu-l-sja zim-oj.
 I.-NOM return-PAST;SG.M-REFL winter-INS.SG
 ‘Ivan returned in the winter’

Zimmermann (2003) proposes the semantic template “SHIFT_{instr}” in (18) to formalize the meaning of the Russian bare instrumental. Semantic templates are a means to accommodate expressions to certain usages and usually involve a type shift. The template in (18) applies to instrumental-marked NPs. As a result, the NP’s referent (x) is in an underspecified relation (R_{instr}) with the (situation/event) argument to be modified (y).²²

(18) $\lambda y \lambda x [x R_{instr} y]$ (Zimmermann 2003: 367)

This analysis confirms the relational nature of semantic cases. But according to Zimmermann, the semantic relation is neither encoded in the instrumental suffix nor in some syntactic head, but introduced by the template in (18). Since I tend to avoid the (dangerously) powerful means of semantic templates, I suggest an alternative that can deal not only with semantic cases, but also with the modifying prepositional phrases already discussed above.

Building on the relational nature of both prepositional phrases and semantic cases, this alternative is as follows: I suggest that prepositional phrases as in (11)–(13) and semantic cases as in (15)–(17) share the same underlying syntax. The only difference between them is that the category-neutral head is overtly realized in the former case, whereas it is phonetically empty in the latter. Different from Zimmermann’s template analysis, it is this phonetically empty head which encodes the underspecified relation (R_{instr}). Depending on the context, this relation receives its ultimate interpretation (R_{path}, R_{instrument}, R_{time}, ...). Importantly, this means that the general format in (14) applies to both ‘PPs’ and semantic case-marked NPs/DPs. Consequently, the semantic case examples in (15)–(17) can be analyzed as in (19)–(21).²³

(19) [VP [VP Ivan šel]_V [VP $\sqrt{[*INS*]}$ [NP les-om]_[INS]]]] (R_{instr} → R_{path})

(20) [VP [VP Ivan pišet]_V [VP $\sqrt{[*INS*]}$ [NP karandaš-om]_[INS]]]] (R_{instr} → R_{instrument})

(21) [VP [VP Ivan vernulsja]_V [VP $\sqrt{[*INS*]}$ [NP zim-oj]_[INS]]]] (R_{instr} → R_{time})

²² The subscript ‘instr’ does not signify an ‘instrument of’-relation, but a set of possible relations: {R_{path}, R_{instrument}, R_{time}, ...}. From this set, one specific relation is chosen based on the context as illustrated in (19)–(21).

²³ Semantic case-marked nominals have been argued to be PPs (with a null head) by, e.g., Bresnan & Grimshaw (1978), Emonds (1985, 1987) and Nikanne (1993). McFadden (2004: 55–69) adopts this view and discusses a number of facts in evidence of it. In Pitsch (2014), I make similar claims wrt Russian instrumentals. Under the present assumptions, it follows that semantic case-marked nominals are category-neutral syntactic phrases.

A direct comparison reveals the complete parallelism between prepositional phrases and semantic cases. I take up the prepositional *iz-za*-phrase from (13) above – repeated and analyzed in (22a) – and compare it to the bare instrumental from (20) as repeated in (22b):

- (22) a. [_{iz-zaP} iz-za_[*GEN*] [NP ugroz-y_[GEN]]] (Rus)
 b. [_{√P} √_[*INS*] [NP karandaš-om_[INS]]]

The only difference between these modifying phrases lies in the PF of their category-neutral head. It follows that we are dealing with the same underlying structure: A category-neutral head bears relational semantics and selects a certain case on its complement. This general format varies only with respect to its head, which may either be overtly realized (‘prepositional phrase’) or phonetically empty (‘semantic case’).

We are now in the position to formulate lexical entries for phonetically empty heads underlying semantic case-marked nominals. Compared to the lexical entries of overtly realized prepositional roots as in (8) above, these entries are even more deficient as they do not only lack categorial features, but also a PF. In (23), I give a lexical entry for the null head underlying the Russian bare instrumental:²⁴

- (23) PF
 GF
 AS $\lambda y_{[INS]} \lambda x$
 PAS $R_{instr}(x,y)$

Some observations are in order here:

First, the case suffix appearing on the complement NP is not the locus or source of the ultimately interpreted semantic relation. Instead, it is a mere morphological form following from the selectional requirements of the respective head. In other words, it is a semantically vacuous morphological marker that reflects the (presence of the) semantic relation encoded in its selecting head.

Second, the case marker seems to be ‘more relevant’ when it co-occurs with a phonetically empty head as in (22b). The reason is that, without the case marker, there would be nothing to reflect the presence of the silent head. By the same token, the case marker seems to be redundant when the head is

²⁴ The PAS is a modified notation of Zimmermann’s (2003) template in (18). See footnote 22 concerning the status and ultimate interpretation of the relation ‘ R_{instr} ’.

overt as in (22a), since the prepositional root seems sufficient to express the semantic relation at hand. Note, however, that there are many cases of homophone prepositional roots. With these, the case marker on the complement NP assumes a disambiguating function. One of many examples is Polish *z*, translating into English as either ‘from’ or ‘with’. The two homophones differ in their case selection; cf. (24a) vs. (24b):

- (24) a. *z* książk-i (Pol)
 √ book-GEN.SG
 ‘from a book’
 b. *z* mlek-iem
 √ milk-INS.SG
 ‘with milk’

Thus, the case marker seems to be truly redundant only if a given preposition has no homophone variants (as is the case with, e.g., Polish *ku* ‘towards’ selecting the dative). That non-homophone prepositions select a case at all is due to the fact that nominals in Slavic languages, excepting Bulgarian and Macedonian,²⁵ generally inflect for case. Put differently, nominal expressions are necessarily marked for case, irrespective of whether the case marker at hand can be ascribed an additional (expressive) function or not.

5 Summary and outlook

In the present paper, I have suggested that Slavic prepositions are category-neutral roots both in the mental lexicon and in syntax. I have tried to show that it is possible to dispense with an additional category P without affecting the functionality of the overall system of categories of Slavic languages. Furthermore, I have suggested that a categorial system without P is sufficient

²⁵ Bulgarian and Macedonian have lost most of their former case inflection. As a result, prepositions are either non-homophone or completely homonymous (leaving disambiguation to the context). Some prepositional heads (like Bulgarian *na*) have assumed the function of case markers, nicely illustrating Abney’s (1987: 63) insight that prepositions oscillate between lexical and functional items. As an anonymous reviewer points out, this intra-Slavic variation in case marking is reminiscent of Nichols’ (1986) typological distinction between head-marking, dependent-marking and double marking languages. It seems that this variation can be explained in terms of the ‘flexibility’ of category-neutral prepositional roots in combination with language-specific developments and idiosyncrasies in the domain of case marking and case morphology.

to capture prepositional modifiers and semantic cases in a unified manner, yielding an analysis that sheds some light on the correlation between form and meaning, viz. the semantics/morphosyntax-interface. Finally, I have proposed that the lexical entries of items categorized as A, N or V differ from the ones of relational roots, hence of ‘prepositions’ or empty heads underlying semantic cases. These differences are summarized in Table 7:

	A, N, V	‘prepositional’ roots	roots underlying ‘semantic cases’
GF	+	–	–
PF	+	+	–
AS,PAS	+	+	+

Table 7. Comparison of lexical entries.

Of course, the programmatic character of the present proposal opens further questions, e.g., whether it can be extended to non-Slavic languages. Apart from that, one may ask whether prefixes can also be analyzed as category-neutral roots, and whether this could explain their characteristics.

With respect to Slavic adverbial participles/gerunds (e.g., Polish *pisząc* ‘writing’, *napisawszy* ‘having written’; Russian *govorja* ‘speaking’, *govorivši* ‘having spoken’), a more detailed question is whether and how these forms, which seem to combine adjectival and prepositional (adverbial) properties, could possibly be integrated into the present argumentation.²⁶

Another detailed question concerns Slavic derived adverbs. Here, one may ask how the analysis adopted from Alexeyenko (2015), according to which the Slavic adverb suffix *-o/-e* is a ‘decategorizer’ (see footnote 8), could possibly extend to so-called predicatives (*kategorija sostojanija* ‘category of state’ in Russian grammars) which show the same marker(s).²⁷

²⁶ Růžička (1990) suggests that Russian clauses introduced by gerunds are underlying PPs encoding an underspecified (temporal) relation. In the present account, a gerundial structure could be analyzed as a category-neutral projection with a null head selecting a gerund. If this is on the right track, gerundial structures would turn out to be on a par with ‘prepositional’ phrases and semantic case-marked NPs/DPs.

²⁷ A predicative is a specialized deadjectival form occurring in the predicative position of sentences describing states (e.g., Czech *bylo chladno* ‘it was cold’). Czech and Polish differ from Russian in that they feature minimal pairs predicative : adverb (e.g., Czech *chladn-o* : *chladn-ě* ‘cold/ly’, Polish *mil-o* : *mil-e* ‘kind/ly’; cf. Komárek 1954). However, Czech and Polish exhibit two distinct markers, *-o* and *-e* (the latter palatalizing the preceding consonant), while Russian is restricted to *-o* (of which *-e* is a mere allomorph). Apparently, it is the availability of two markers in Czech and Polish that allows for a

Despite these (and certainly more) open questions, I hope to have shown that the possibility of reducing the number of (lexical) categories is worth exploring.

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formal differentiation, all the more, as this differentiation seems arbitrary in that it affects only a subset of the potentially possible adjectival lexemes.

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