

The Syntactic Structure of PPs*

Petr Biskup

Universität Leipzig

This paper is concerned with the syntactic structure of prepositional phrases in Czech. Investigating morphological, case and referential properties of different types of PPs, I argue that PPs have a rich internal structure. I propose that in addition to the standardly assumed locative and directional projection and in addition to degree adjuncts, PPs contain T(ense)-head, which bears a valued T-feature and unvalued ϕ -features and which is responsible for the case assignment. I propose that syntactically, case on the prepositional complement is a reflection of the Agree operation between T-features and ϕ -features on the complement and T-head and semantically, it is a reflection of semantic features of the decomposed preposition. The prepositional complement can be overt as well as covert. In the case of the covert prepositional complement, case is spelled out on the closest overt element in PP. I show that the prepositional complement is typically expressed covertly in adverbial PPs. I also discuss referential properties of the covert noun and argue that they cannot be determined in the narrow syntax.

1. Data

1.1 Prepositional merger

A closer look at prepositions reveals that they can merge with different categories. Concretely, they can merge with a preposition, as shown in (1a), with a noun phrase, as in (1b), with an adverbial whP, as in (1c), (1g), with a verb (1d), an adjective (1e) and with a clause, as in (1f). Traditionally, lexical items like (1a) or (1c) are called adverbials, items like (1f) conjunctions and items like (1d) prefixed verbs.

- | | | | |
|---|--|---|-------------------------------------|
| (1) a. <i>do-před-u</i>
to-in.front.of-gen.sg
'forward' | b. <i>do Prah-y</i>
to Prague-gen.sg
'to Prague' | c. <i>do-kdy</i>
to-when
'till when' | d. <i>do-jít</i>
to-go
'come' |
| e. <i>do-modr-a</i>
to-blue-gen.sg
'a little blue' | f. <i>přes-to-že</i> [TP ...]
over-the-that
'although' | g. <i>z-kam-a</i>
out-where-gen.sg
'from where' | |

There are also complex prepositions, as demonstrated by the bimorphemic examples (2a) and (2b) and the trimorphemic examples (2c) and (2d).

- | | | | |
|--|--|--|---|
| (2) a. <i>z-pod</i>
out-under
'from under' | b. <i>ze-za</i>
out-behind
'from behind' | c. <i>z-po-za</i>
out-along-behind
'from behind' | d. <i>z-po-nad</i>
out-along-above
'from above' |
|--|--|--|---|

* I would like to thank the audience at the CFG conference for helpful comments and suggestions. Particular thanks go to the non-anonymous reviewer Jakub Dotlačil.

1.2 Prepositions and case

As shown by the following examples, prepositions can assign case to different categories. The preposition *do* assigns genitive to the preposition *před* (3a), *ku* assigns dative to *před* (3b) and *na* assigns accusative to *před* (3c). In (3e) *do* assigns genitive to the adjective *modr* and in (3f) *na* assigns accusative to *modr*. *Do* can also assign genitive to the noun in (3d) and the preposition *z* assigns genitive to the deictic adverb *tam* in (3g).

- (3) a. *do-před-u*
to-in.front.of-gen.sg
'forward'
- b. *ku-před-u*
toward-in.front.of-dat.sg
'forward'
- c. *na-před*
on-in.front.of.acc.sg
'ahead'
- d. *do Prah-y*
to Prague-gen.sg
'to Prague'
- e. *do-modr-a*
to-blue-gen.sg
'a little blue'
- f. *na-modr-o*
to-blue-acc.sg
'become blue'
- g. *z-tam-a*
out-there-gen.sg
'from there'

It is a well-known fact that certain prepositions assign one case, as shown in (4), and other prepositions assign more cases, as demonstrated by the accusative/locative prepositions in (5) and by the accusative/instrumental prepositions in (6).

- (4) a. *do dom-u*
to house-gen.m.sg
- b. *k dom-u*
toward house-dat.m.sg
- c. *při dom-ě*
at house-loc.m.sg
- d. *přes dům*
across house-acc.m.sg
- e. *z dom-u*
out house-gen.m.sg
- (5) a. *na / o dom-ě*
on about house-loc.m.sg
- b. *na / o dům*
on about house.acc.m.sg
- (6) a. *mezi / nad / pod / před / za aut-y*
between above under in front of behind car-inst.n.pl
- b. *mezi / nad / pod / před / za aut-a*
between above under in front of behind car-acc.n.pl

The cases in examples (5) and (6) express the difference between the stative meaning (location) and the dynamic meaning (direction or path).¹ More concretely, locative and instrumental express the locative meaning and accusative expresses the directional meaning. This is evidenced by (in)compatibility of particular Ps with stative verbs. For instance, only the instrumental Ps in (6a), and not the accusative Ps in (6b), are compatible with the stative predicate *stál*, as shown by (7).

¹ The preposition *o* cannot have the locative meaning (only the directional). The locative-assigning *o* could probably be described with a more abstract feature like stativity.

- (7) a. *Stál mezi / nad / pod / před / za aut-y*
 stood between above under in front of behind car-inst.n.pl
 ‘He stood between/above/under/in front of/behind cars.’
- b. **Stál mezi / nad / pod / před / za aut-a*
 stood between above under in front of behind car-acc.n.pl

2. Analysis

2.1 Decomposition of PPs into DirP and LocP

I begin with the difference between directional and locative prepositions. It has been argued that directional (dynamic) PPs are more complex than the locative ones (Jackendoff 1983, Bierwisch 1988, Kracht 2002, van Riemsdijk & Huybregts 2002, Zhang 2002, den Dikken 2006, among others). For instance, according to Jackendoff (1983:164), directionals have meaning (8c), where the PATH-FUNCTION takes the meaning of the locative preposition (8a) as its argument. Consequently, the directional PP *from on the table* is represented as (8d).

- (8) a. [_{Place} PLACE-FUNCTION ([THING])]
 b. [_{Place} ON ([Thing TABLE])]
 c. [_{Path} PATH-FUNCTION ([_{Place} PLACE-FUNCTION ([THING]))]
 d. [_{Path} FROM ([_{Place} ON ([Thing TABLE]))]

According to Bierwisch (1988:34), the locative *in* can be represented as (9a), where the region of the external argument *x* is included in the region of the internal argument *y*. The directional *in* is again more complex and contains the path function FIN. Hence, the region of the end of the path of the external argument *x* is included in the region of *y*.

- (9) a. Locative *in*: /in/; [-N, -V, -Dir]; $\lambda y \lambda \underline{x} [\text{LOC } x \subseteq \text{LOC } y]$
 b. Directional *in*: /in/; [-N, -V, +Dir]; $\lambda y \lambda \underline{x} [\text{FIN } [\text{LOC } x] \subseteq \text{LOC } y]$

Kracht (2002:159) argues that locative expressions universally consist of two layers. The first layer relates to the location and the other one to the motion. The first layer is called localiser (L) and describes the way in which objects are positioned wrt. each other. The other one is called modaliser (M) and describes the way in which an object moves wrt. the given configuration; consider (10).

- (10) [M [L DP]]

In what follows, I present several empirical arguments for the decomposition of PPs and for the claim that DirPs are more complex than LocPs. The first argument comes from

morphologically complex Ps. As one can observe in (2), there are complex directional Ps containing a locative P.² In contrast, there are no complex locative Ps containing a directional P. Similarly, directional (dynamic) wh-adverbs can be derived from locative (stative) wh-adverbs, as shown for temporal adverbs in example (11).³ However, there are no examples of locative wh-adverbs derived from directional wh-adverbs.

- (11) a. *kdy* b. *do-kdy* c. *od-kdy*
 when to-when from-when
 ‘when’ ‘till when’ ‘from when’

As shown in (3a-c) and (12a), the directional adverbial PPs are also derived from locative PPs. One might object that this argument is problematic because *před* has both the locative and the directional meaning. However, the Russian preposition *pered* has only the locative meaning (12b) and still can serve as the base of the directional PPs, as shown in (12c,d).

- (12) a. *v-před* b. *pered* c. *v-perěd* d. *s-pered-i*
 in-in.front.of-acc.sg in front of in-in.front.of-acc from-in.front.of-gen
 ‘forward’ ‘in front of’ ‘forward’ ‘from the front’

The next argument is based on Bošković (2004). He discusses floating quantifiers in PPs and argues that PPs have a layered structure similar to CP. If Bošković is right, then in example (13), which is a modification of Bošković’s examples, the preposition *s* is head-moved and *těmi studenty* is XP-moved across *všemi*, which means that Czech PPs can also be decomposed.⁴

- (13) [*S* *těmi studenty* *všemi*] *jsem mluvil o* *politice*.
 with the students all am talked about politics.
 ‘Pavel talked with all the students about politics.’

Having said this, I decompose PPs into the Dir(ectional)P and Loc(ative)P, as shown in (14). This means that in complex Ps like e.g. (2a) and (2b) the left morpheme spells out the head Dir and the right one the head Loc. Note that they cannot be reversed because *z(e)* has only the directional meaning. This is supported by the contrast between (11) (and other complex

² Although *pod*, *za*, *nad* are ambiguous between the locative and directional meaning, in the complex directional Ps in (2), their locative meaning is used. For *po*, see below.

³ For locative wh-adverbs, compare e.g. the German example (i).

- (i) a. *wo* b. *wo-hin* c. *wo-her*
 where where-there where-here
 ‘where’ ‘where’ ‘from where’

PPs) and (i) in note 2. In Czech, which is a VO language, Dir precedes Loc and in German, which is an OV language, Dir follows Loc.

(14) [_{DirP} Dir [_{LocP} Loc [_{DP} N]]]

It seems that a more fine-grained decomposition is necessary; recall the trimorphemic Ps *zpoza*, *zponad* in example (2). The question arises what the morpheme *po* expresses. It is known that in the verbal domain *po* works as a delimiter; see example (15a) and Filip (2000, 2003), Součková (2004) and Ziková & Dočekal (2007) for discussion of the extensive measure function of *po*. Thus, the meaning of *zpoza* can be paraphrased as ‘from the place (region) that is located a little behind the Ground argument’. For some speakers, the measure meaning of *po* is not evident in examples (2c,d) but there are PPs in which the meaning is clearly present. Consider e.g. the adverbial PPs in (15b), where *po* occurring between the two directionals means *short*, and the adverbial in (15c), where *po* can be paraphrased as a delimiter *kousek* ‘piece’.

(15) a. *po-zpívát si* b. *z-po-vz-dál-i* c. *o-po-dál* (= *o kousek dál*)
 along-to.sing self.dat out-along-up-distance-gen.sg about-along-distance.acc.sg
 ‘to sing for a while’ ‘from a short distance’ ‘at a short distance’

The data suggest that there is a degree or quantificational phrase between DirP and LocP. This seems to be supported by example (16), where the quantificational morphemes *ně*, *ni* and *k* follow the directional *od*.⁵ However, there are also adverbial PPs where *po* certainly has the measure meaning and precedes the directional P, as shown by the translations and the ordering of *po* wrt. the directional P *z* in example (17).

(16) a. *od-ně-kud* b. *od-ni-kud* c. *z-kam-a*
 from-some-which.way from-no-which.way out-where-gen.sg
 ‘from some place’ ‘from nowhere’ ‘from where’

(17) a. *po-z-voln-a* b. *po-z-ne-náhl-u*
 along-out-free-gen.sg along-out-neg-sudden-gen.sg
 ‘little by little’ ‘little by little’

Thus, there are two basic possibilities. *Po* is either a degree/quantificational head in the extended projection of P that can be located above Dir, between Dir and Loc as well as

⁴ The fact that *s těmi studenty všemi* precedes the second-position clitic *jsem* shows that the PP form a constituent.

⁵ As we will see in section 2.3.2, *k-a-m* can also be decomposed. The wh-morpheme *k-* can be treated as an existential quantifier.

between two Dirs, or it is a degree/quantificational phrase that can be adjoined to Dir as well as to Loc. I favour the second possibility and analyze *po* with the measure meaning as Deg(ree)P that can adjoin to different projections in PP.

The first reason for this is that the delimitative *po*, in contrast to other Ps, does not participate in case assigning processes.⁶ This holds for cases where the measure *po* is a lower preposition in PP, as in (2c,d), where *zpoza* and *zponad* (in fact, the preposition *z*) assign genitive to their complement (note that *po* assigns locative and accusative) as well as for cases where *po* is the highest preposition, as in (17a), where the genitive case is also assigned by *z*.⁷ The next reason is that we would have to assume more quantificational heads in the extended projection of P because there are PPs with several quantificational morphemes, as e.g. (17b), where the directional *z* intervenes between the delimitative *po* and the negative morpheme *ne*.⁸ In addition, *po* can appear in different positions in the syntactic structure of PP, hence the adjunct analysis seems to be more appropriate than the head analysis, which would have to assume different positions for the head *po* in the extended projection of P.

2.2 *The prepositional case and the head T*

Prepositions standardly assign case to their complement. A question immediately arises how it works in decomposed PPs and what the difference between Ps assigning one case and Ps assigning more cases is. A closer look at data shows that case is determined by the highest P. For instance, the complex prepositions in example (2) assign genitive because the directional *z(e)*, which assigns genitive, is higher than (precedes) the other prepositions in the appropriate PPs. In the case of adverbial PPs like e.g. (3a-c), case is also determined by the higher P, i.e. by the directional *do*, *ku*, *na*, and not by the lower P *před*, which assigns the accusative and instrumental case. As already mentioned above wrt. examples (5) and (6), when a simple P has the locative meaning, i.e. only the head Loc projects, it assigns the locative case. However, when the P has the directional meaning, i.e. the head Dir projects as well, then it assigns the directional case because the head Dir is higher than Loc.

⁶ For more details, see the next section.

⁷ The other relevant examples are not conclusive either because of identity of the assigned case (15c) or because of the case syncretism (15b), (17b). Consider also example (i), with the Russian complex prepositions assigning the instrumental case, which shows that *po* does not affect case (Czech counterparts *ponad* and *poza* assign instrumental and accusative).

(i)	a.	<i>po-nad</i>	<i>bereg-om</i>	b.	<i>po-za</i>	<i>les-om</i>
		along-above	bank-inst.sg		along-behind	wood-inst.sg
		‘above the bank’			‘behind the wood’	

⁸ Another example is e.g. *po-ně-kud* ‘in some degree’ with the delimitative *po* and the existential morpheme *ně*.

This means that the case-assigning head should somehow know whether or not the head Dir projects. It seems that Loc and Dir cannot be the case-assigning heads because in such a case Dir should assign case exactly when Loc does not assign case and Loc should assign case when Dir does not project. Given the derivational point of view, the problem with this dependency is that Loc does not know whether or not Dir will be merged in the derivation, hence it does not know whether or not it shall assign case. A related problem is that it is not clear why in certain cases Loc could assign case and in others could not.

To avoid this complication, one could propose that the case-assigning ability of Loc is connected to the presence of certain features on Loc (e.g. to unvalued uninterpretable ϕ -features, as in the case of structural cases) and that the features are optional. However, this proposal also cannot solve the dependency problem, in this case the dependency between the presence/absence of ϕ -features on Loc and the presence/absence of Dir (more specifically, the presence/absence of ϕ -features on Dir, under the assumption that Dir assigns case in the same way as Loc). Thus, it could e.g. happen that both Loc and Dir bear unvalued uninterpretable ϕ -features, which would lead to a crashing derivation because ϕ -features on Dir could not be valued because the case feature on the prepositional complement is already valued by Loc and the argument is no more active. For all possible scenarios wrt. the presence/absence of Loc, Dir and their ϕ -features in PP, see the following table.

	a. no Dir	b. Dir without ϕ -features	c. Dir with ϕ -features
1. no Loc	not interesting	*	*
2. Loc without ϕ -features	*	*	OK
3. Loc with ϕ -features	OK	*	*

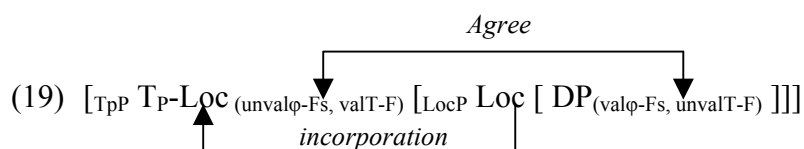
The two OK cells pose the dependency problem. Cases 1b and 1c are ungrammatical because the presence of the directional meaning (Dir) presupposes the presence of the locative meaning (Loc). Cases 2a and 2b violate the Case Filter because the prepositional complement does not bear a case. Case 3b is bad because the appropriate P would have the directional meaning but the prepositional complement would bear a locative case. 3c is bad because ϕ -features on Dir would be unvalued.

Given the dependency complication, I propose that case is assigned by a higher head, which can see all the relevant information. More specifically, I follow Biskup (2009), who proposes that all cases are an unvalued T(ense)-feature on the head D and that prepositions bear unvalued ϕ -features and a valued T-feature. This is an extension of Pesetsky & Torrego (2004, 2006), who propose that structural case is an unvalued T-feature on D that is valued by

T and T₀ and that prepositions bear a valued T-feature. Biskup's proposal has the advantage that all cases are treated uniformly as Agree between T-features and φ-features of the probe and goal and that the T-feature on Ps can account for the relation between the prepositional case, the morphological aspect and the perfective structural accusative. Thus, I propose that analogously to the verbal domain, there is a head T in PP (called T_P) that is placed higher than Dir and Loc, as demonstrated in (18).

(18) [T_{PP} T_P [DirP Dir [LocP Loc [DP N]]]]

As demonstrated by examples (4)-(6), the directional and locative case is not identical for all prepositions. The case assigned to the prepositional complement is always determined by the particular preposition, e.g. the directional *do* assigns genitive and the directional *k* assigns dative. This means that the head T_P must somehow get the information which case it shall assign. This is ensured by incorporation of Loc (and Dir if it projects) into T_P; recall that preposition incorporation is possible in cases like (13).⁹ There are also cases like e.g. the prefixed verb in (1d) that show that prepositions can even incorporate into a higher category.¹⁰ As already discussed above, case is a reflection of the operation Agree between the valued T-feature and unvalued φ-features on P, i.e. on T_P, and the unvalued T-feature and valued φ-features on the prepositional complement. Then, the whole process in a locative PP looks like (19).



That there is an Agree relation between P (i.e. T_P) and the prepositional complement is supported by the fact that there are languages with P agreement, e.g., Hungarian, Irish, Welsh, Jacaltec, Abaza; see Asbury et al. (2007), Baker (2008), Brennan (2008).

To be more concrete, let us take e.g. the preposition *za*. *Za* assigns instrumental as the locative case and accusative as the goal directional case. The first possibility would be to treat the relation between a particular P and case as idiosyncratic. Such information is stored in the

⁹ One might propose that T_P can get the information via the selection relation between T_P and Loc (Dir). However, if it is true that selection holds only between sisters, then this proposal might be problematic in the case of more articulated PPs. Another proposal could be based on Agree between T_P and Loc (Dir) but it is not clear what feature should be involved in this relation and how to solve the dependency between the type of the feature on T_P and the presence/absence of Dir in the derivation.

lexicon. Then, the derivation with the locative preposition *za* would look as follows. *Za* merges as Loc with the prepositional complement and LocP merges with the head T_P because there is no Dir in this case. Then, *za* incorporates into T_P . Since there is no Dir incorporated into T_P , the incorporated *za* would have to switch on the instrumental case on the head T_P .

As for the directional *za*, the derivation would work similarly. What is different is that Dir projects and *za* incorporates into Dir before it incorporates into T_P . Since Dir incorporates into T_P as well, T_P would have to assign the directional case (accusative). However, it is not clear how it is ensured that T_P assigns the directional case when Loc also incorporates into T_P . The same complication arises in the case of the complex P *zeza*, where the incorporated Dir *ze* would have to somehow switch on the directional case (genitive) on T_P .

There is another possibility, which does not suffer from the problem above and is conceptually superior to the first possibility because the relation between Ps and their case(s) is not idiosyncratic there. This analysis is in the Jakobsonian tradition and treats prepositional cases as a reflection of semantic features of particular Ps. Concretely, I propose that semantic features of Loc and Dir incorporated into T_P represent the value of the T-feature. I assume that the T-feature can have more values. The value (or values) then is copied on the prepositional complement by the Agree operation and is spelled out as a certain case at PF. One might ask what the T-feature has to do with prepositional semantic features. As we will see below, there is indeed a relation between the type of the prepositional semantic feature and temporal properties. Given the fact that all source prepositions assign genitive in Czech, I propose that if Dir with the source meaning - i.e. with the source-feature - incorporates into T_P , then T_P values the unvalued T-feature on the prepositional complement as [source]. Given the following case rule, the prepositional complement then is spelled out with the genitive case: [source] \rightarrow genitive.¹¹ Consequently, we expect an appropriate source temporal interpretation. Indeed, e.g. in *od 1980* ‘since 1980’, there is an opened temporal interval going from 1980 onwards.

There are also directional Ps of the goal type. They mostly assign accusative. Hence, if Dir with the goal-feature incorporates into T_P , then T_P values the unvalued T-feature on the prepositional complement as [goal], which - given the following case rule [goal] \rightarrow accusative - results in the accusative marker on the argument. However, there are also goal Ps like *k* and *do*, which assign dative and genitive, respectively. *Do* differs from other goal Ps in

¹⁰ The complex P-head incorporates into V and *v* and then interacts with the T(ense)-feature on the aspectual head. This brings about perfectivity (definiteness of the reference time) and the definiteness effect with the structural accusative (see Biskup (to appear)).

the fact that the Figure argument ends in the Ground argument. Therefore, I assume that *do* also bears a contain-feature. Consequently, when Loc and Dir with the contain-feature and the goal-feature incorporate into T_P , T_P values the unvalued T-feature on the prepositional complement as [goal, contain], which given the following rule results in the genitive marker on the complement: [goal, contain] \rightarrow genitive. I assume that application of case rules is determined by the Subset Principle (similarly as insertion of vocabulary items in Distributed Morphology). This means that the case rule [goal, contain] \rightarrow genitive is more specific (there are two values) than the case rule [goal] \rightarrow accusative (there is only one value). Therefore the prepositional complement bears genitive, and not accusative. Values [goal, contain] of the T-feature should again bring about an appropriate temporal interpretation. As expected, e.g. in *do 1980* ‘till 1980’, there is a temporal interval going to 1980 and included in it. It is obvious now why this analysis does not suffer from the problem of the first possibility. Since the prepositional case is a spellout of several different features, it does not play a role how many heads incorporate into T_P .

As for *k*, I assume that Dir bears an oriented-feature because according to *Mluvnice češtiny* (1986:200), in the case of *k*, the Figure is oriented wrt. the non-oriented Ground. Thus, T_P values the unvalued T-feature on the prepositional complement as [goal, oriented], which given the following rule results in the dative marker on the complement: [goal, oriented] \rightarrow dative.

Since all Ps, more specifically, their meaning, can be decomposed into certain features, such an analysis can be proposed for other types of Ps as well. In this approach, case is not determined by particular Ps but rather particular submeanings of Ps, i.e. by heads with appropriate features incorporated into T_P . Such a generalized way is certainly more attractive than association of Ps with particular cases in the lexicon. Therefore e.g. in the case of the locative *za*, the analysis should work in a parallel fashion. Since *za* assigns instrumental as the locative case, Loc should bear a feature that specifies the meaning of instrumental locative prepositions. This can be the projective-feature; see Zwarts & Winter (2000), Gehrke (2008), Caha (2009).¹² Thus, T_P values the unvalued T-feature on the prepositional complement as [projective] and the complement is spelled out with the instrumental marker because of the following rule: [projective] \rightarrow instrumental.

¹¹ This rule says that if DP bears the source value, it must receive genitive.

¹² Alternatively, as proposed by Emonds (2007), instrumental could be the default case and the other locative cases (more precisely, Loc of the appropriate Ps) would need a special feature.

The directional *za* is more complex; Dir with the goal-feature projects, hence T_P values the T-feature on the prepositional argument as [goal, projective]. However, there is a conflict between the case rule [projective] \rightarrow instrumental and the case rule [goal] \rightarrow accusative because both rules (their values) are a subset of the featural set on the prepositional complement and neither of them is more specific. Therefore I modify the case rule [goal] \rightarrow accusative as follows: [goal, x] \rightarrow accusative. X is a variable over values and this ensures that the case rule [goal, x] \rightarrow accusative (with two values) is more specific than [projective] \rightarrow instrumental (with one value). Hence the complement receives accusative. Since x is only a variable, the case rule [goal, x] \rightarrow accusative is still less specific than e.g. the case rule [goal, contain] \rightarrow genitive, hence it cannot block genitive with the goal P *do*.

In the case of the complex P *zeza*, Dir (*ze*) projects and bears the source-feature; hence T_P values the T-feature on the prepositional complement as [source, projective], which gives a conflict between the case rules [projective] \rightarrow instrumental and [source] \rightarrow genitive. Therefore I modify the case rule [source] \rightarrow genitive as follows: [source, x] \rightarrow genitive. This rule is then more specific than [projective] \rightarrow instrumental; hence the complement DP receives genitive, and not instrumental.

Having the incorporation analysis in place, we can come back to the delimitative *po*. In the preceding section, we saw that the delimitative *po* does not affect case and I proposed that *po* is DegP adjoined to LocP or DirP. It is a well-known fact that adjuncts have peculiar properties (e.g. they are not visible for syntactic processes like Binding Condition C); therefore it has been proposed that they are merged acyclically (Lebeaux 1988), that they are merged in a third dimension (Åfarli 1997) or that they are merged by the pair-merge operation, in contrast to other elements (Chomsky 2004). I take a similar point of view here and assume that features of the delimitative adjunct *po*, in contrast to features of Loc and Dir, are not visible for the head T_P . This is the reason why the delimitative *po* cannot affect case assignment properties of T_P .

This analysis predicts that *po* with a non-adjunct status can affect case. This prediction is right, as shown by example (20a), where *po* brings about the manner reading and assigns locative (of the paradigm *hrad* ‘castle’). The case is indeed assigned by *po*, and not by *před*, because *před* assigns either instrumental (20b) or accusative (20c).¹³ That *-u* in (20a) is really

¹³ In (20b) I mean the temporal *předem* ‘in advance’. Since this adverbial PP is locative (stative) – as shown by the fact that it can answer the stative question *kdy* ‘when’, in contrast to the dynamic *odkdy* ‘from when’ or *dokdy* ‘till when’ – Dir is not projected. And since the locative P *před* assigns instrumental, the instrumental marker *-em* is determined by Loc *před*. This contrasts with the locative path adverbial *předem* ‘through the front’, which is directional (dynamic), as shown by the fact that it can answer the dynamic question *kudy* ‘which

the locative case ending is evidenced by the locative PP *ve-před-u* ‘in the front’, in which *v(e)* assigns the locative case.

- (20) a. *běhání po-před-u* b. *před-em* c. *před dům*
 running along-in.front.of-loc.sg in.front.of-inst.sg in.front.of house.acc
 ‘forward running’ ‘in advance’ ‘out in front of the house’

2.3 Prepositional complements

2.3.1 Overt complements

Now, I turn to the bottom part of decomposed PPs, concretely, to overt prepositional complements. We already saw that the complement of Loc can be a bare DP, as in (1b), repeated here as (21a). The complement can also be expressed by a modified DP, as in (21b).

- (21) a. *do Prah-y* b. *do (toho) (velkého) měst-a*
 to Prague-gen.sg to the big city-gen.sg
 ‘to Prague’ ‘to the big city’

The prepositional complement can also be expressed by a sentential DP, as demonstrated in (22). The question arises why the demonstrative pronoun *to* is necessary in sentences like (22a); consider also conjunctions in (22b-d).¹⁴ The reason probably is not interpretational because in examples (23a,b) *to* is optional and its presence does not change the meaning of the sentence. Rather, *to* must be present in (22) because of case. The contrast between the accusative and nominative clause in (23a,b) and the instrumental clause in (23c) suggests that oblique cases, in contrast to structural ones, must be spelled out overtly in Czech. Since Ps in (22) assign oblique cases and since clauses do not have a special case marker, their case is marked by the case ending on the demonstrative *to* located between P and the complementizer.

- (22) a. [_{PP} *Přes* [_{DP} *-to* [_{CP} *-že Pavel chodí pozdě*]]], *Jana ho miluje.*
 over the that Pavel goes late Jana him loves.
 ‘Despite the fact that Pavel is always late, Jana loves him.’
- b. *po-*(tom) [C' co [TP ...]]* c. *mezi-*(tím) [C' co [TP ...]]* d. *pro-*(to)-[C' že [TP ...]]*
 after-the what between-the what for-the-that
 ‘after’ ‘while’ ‘because’

way’ and not the stative question *kde* ‘where’. Hence the marker *-em* must be determined by a covert Dir because the directional *před* assigns accusative.

¹⁴ The complementizer *co*, originally a declinable wh-pronoun, does not decline.

- (23) a. *Řekl (to), že Pavel odešel.*
 said the that Pavel left
 ‘He said that Pavel had left.’
- b. *(To) Že odešel, naštvalo Jirku.*
 the that left made angry Jirka
 ‘That he had left made Jirka angry.’
- c. *Potrestal Jirku *(tím), že ukradl knihu z jeho obchodu.*
 punished Jirka the.inst that stole book from his shop
 ‘He punished Jirka by stealing a book from his shop.’

Another argument for the case analysis comes from *co*-relatives. The following example shows that in relative clauses with a predicate assigning structural cases (24a,b), the resumptive pronoun, which is case marked, is optional with the accusative argument. In contrast, in relatives with a predicate assigning an oblique case (24c,d), the resumptive is obligatory when it refers to the oblique argument. Thus, since *co* does not decline and oblique cases must be expressed overtly, the resumptive bearing the appropriate oblique case must appear in the relative clause. The control example (24e) shows that when the declinable whP *které* is used instead of *co*, the resumptive does not have to (in fact, must not) be present.

- (24) a. *To je ta žena, co miluje Pavl-a.*
 it is the woman what loves Pavel-acc
 ‘This is the woman who loves Pavel.’
- b. *To je ta žena, co (ji) Pavel miluje.*
 it is the woman what she.acc.f.sg Pavel.nom loves
 ‘This is the woman who Pavel loves.’
- c. *To je ta žena, co Pavl-ovi pomohla.*
 it is the woman what Pavel-dat helped
 ‘This is the woman who helped Pavel.’
- d. *To je ta žena, co *(jí) Pavel pomohl.*
 it is the woman what she.dat.f.sg Pavel helped
 ‘This is the woman who Pavel helped.’
- e. *To je ta žena, kter-é Pavel pomohl.*
 it is the woman who-dat.f.sg Pavel helped
 ‘This is the woman who Pavel helped.’

Thus, we arrive at the syntactic structure of PPs as shown in (25).¹⁵ Since covert prepositional complements are more interesting than the overt ones, I leave the overt complements and in the next section I turn to the covert complements.

(25) [_{TPP} T_P [_{DirP} (DegP) Dir [_{LocP} (DegP) Loc [_{DP} (Modifier) N/CP]]]]

2.3.2 Covert complements

In section 1.2, we saw that prepositions assign case to different overt categories. In this section, I argue that there is a covert noun complement in PPs like *dopředu* ‘forward’, *napřed* ‘ahead’, *ztama* ‘from there’ and *zřídka* ‘seldom’. I begin with the type *dopředu*.

Dopředu type

The first argument for the presence of a covert noun comes from the consistent case behavior of *dopředu* PPs. A closer look at (26a-c) (repeated from (3)) and (26d) reveals that PPs of the *dopředu* type bear nominal cases of the masculine paradigm *hrad* ‘castle’. Thus, there must be some information present in the PPs that ensures that the genitive, dative and accusative case is always spelled out as a case ending of the paradigm *hrad*. Note also that if it is correct that case is a reflection of the Agree operation between ϕ -features (and T-features) of the probe and goal, there must be an element in the syntactic structure of PP bearing valued interpretable ϕ -features (of the paradigm *hrad*).

(26) a. *do-před-u*
to-in.front.of-gen.sg
‘forward’

b. *ku-před-u*
toward-in.front.of-dat.sg
‘forward’

c. *na-před*
on-in.front.of-acc.sg
‘ahead’

d.

nom	hrad
gen	hrad-u/a
dat	hrad-u
acc	hrad
loc	hrad-u/e
inst	hrad-em

There are also prepositional combinations where the noun is visible, as demonstrated by the following example, where (*e*)*k* spells out N. PPs like *do-před-u*, *do-zad-u* etc. refer to a certain place, hence there should be a referential element (e.g. something like Kayne’s (2004)

¹⁵ Quantificational morphemes like e.g. the existential *ně* are not considered here.

covert noun PLACE) in such PPs. For instance, *předek* means ‘the place in the front’ and *dopředu* means ‘to the place in the front’.

- (27) a. *před-ek* b. *do před-k-u* c. *na před-ek*
 in.front.of-N.nom.sg to in.front.of-N-gen.sg on in.front.of-N.acc.sg
 ‘the front’ ‘to the front’ ‘on the front’

We know that in *dopředu* PPs, given Agree between T_P and the prepositional complement, the covert N must bear valued interpretable ϕ -features and that it is lexicosemantically deficient (covert). How is then reference obtained in cases like *dopředu*?

The verbal head T is related to subject reference – it agrees with the subject – and to the speech time (Demirdache & Uribe-Etxebarria 1997), i.e. to the speaker. As shown by the following examples, *do* in (28) and (29) brings about speaker/subject anchoring. Concretely, there is no speaker anchoring wrt. the Ground argument with the unprefix verb in (28a). However, the prefix *do* brings about speaker anchoring if no Ground is present (28b).¹⁶ The prefix brings about subject anchoring when the Ground is an anaphor, as shown in (28c). And if there is an overt Ground PP, the Ground reference emerges, as shown in (28d).

- (28) a. *Pavel nesl knihy.*
 Pavel carried books
 ‘Pavel was carrying books.’
- b. *Pavel do-nesl knihy.*
 Pavel to-carried books
 ‘Pavel brought books (to the speaker).’
- c. *Pavel si do-nesl knihy.*
 Pavel self.dat to-carried books
 ‘Pavel brought books to his place.’
- d. *Pavel do-nesl knihy do knihovny.*
 Pavel to-carried books to library
 ‘Pavel brought books to the library.’

The contrast in (29) shows that *do* in *dopředu*, in contrast to *ze* in *zepředu*, can bring about both subject anchoring and speaker anchoring. While in (29a) both readings are possible, in

¹⁶ Consider question (i). This question can be answered by (28b). This shows that if a certain place appears in the context, as *tam* in (i), that is related to the event of the appropriate sentence ((28b) in our case), then the Ground is determined by the context place. This place then does not have to coincide with speaker’s place, as in our example.

(i) *Co tam dělal?*
 what there did
 ‘What did he (Pavel) do there?’

(29b) only speaker anchoring wrt. to the Ground is possible. Since reference of *zepředu* and the moving event are related to the same time, then in our world, where people do not split, *Pavel* cannot be the moving object (the Figure argument) and at the same time determine reference of the Ground argument (of the reference object).

(29) a. *Pavel šel do-před-u.*
 Pavel went to-in.front.of-gen.sg
 ‘Pavel was going forward.’

b. *Pavel šel ze-před-u.*
 Pavel went out-in.front.of-gen.sg
 ‘Pavel was going from the front.’

Given these facts and Agree between T_P and the prepositional complement in PPs, one can ask whether referential properties of the covert noun in PPs are determined by a connection between T_P and the verbal head T (according to Biskup (2009, to appear), verbal prefixes are incorporated prepositions, hence there is a covert *doPP* in (28b)). Such an analysis is not on the right track because there are cases like (30), with no speaker or subject anchoring. Sentence (30) can refer to a situation where the speaker stood behind Pavel and Pavel moved the piece behind his back toward the speaker. This means that in this situation the reference of *dopředu* cannot relate to Pavel or to the speaker and the only anchoring we get is the chessboard anchoring.

(30) *Pavel táhl za svými zády figurkou do-před-u.*
 Pavel moved behind self back piece to-in.front.of-gen.sg
 ‘Pavel moved the piece forward behind his back.’

Another possibility would be to determine referential properties of the covert noun by locality, by the closest potential coreferent. However, this proposal must also be refuted because we find examples where referential properties of the covert noun certainly are not determined by the closest element. Consider example (31), which can refer to a situation where Pavel moves having a pawn in his hand and there is no chessboard at hand. In this situation only subject or speaker anchoring is possible despite of the fact that *figurku* is the closest potential coreferent of *dopředu*. Since there is no chessboard and pawns do not have a front or back, reference of the covert noun in *dopředu* cannot be determined by *figurku*.¹⁷

¹⁷ In a situation where Pavel is playing chess with big pieces, moving on a huge chessboard, reference of *dopředu* can be determined by the pawn. Note that ambiguity of *dopředu* also poses a problem for the locality analysis.

Zřídka type

This type of PPs contains a covert noun of the neuter paradigm *město* ‘city’ with appropriate \varnothing -features. This is obvious from the fact that this type of PPs, similarly as the preceding type, behaves consistently wrt. case, as shown by paradigm (35e) and examples (35a-d).

(35) a. *z-řídka-a*
out-rare-gen.sg
‘seldom’

b. *na-řídka-o*
on-rare-acc.sg
‘to thinness’

c. *řídka-e*
rare-loc.sg
‘rarely’

d. *řídka-o*
rare-nom/acc.sg
‘thinness’

e.

nom	měst-o
gen	měst-a
dat	měst-u
acc	měst-o
loc	měst-ě/u
inst	měst-em

Supporting arguments come from Caha & Medová (2009), who argue that manner adverbs derived from adjectives like e.g. *rychl-e* ‘fast’ bear the locative case of the paradigm *město* ‘city’ and that adverbs like *smutn-o* ‘sadness’ bear nominative or accusative (they correspond to (35c) and (35d), respectively). Their arguments are based on the parallel behavior of the adverbs and resultatives in the active and passive, on the allomorphy of the locative ending *ě* and on crosslinguistic data.

The following examples containing *ráno* ‘morning/in the morning’ demonstrate that there is indeed a relation between nouns of the paradigm *město*, as shown in (36a), and adverbials of the paradigm *město* (36b).

(36) a. *Ráno miluju.*
morning like
‘I like mornings.’

b. *Pavel přišel ráno.*
Pavel.nom came morning
‘Pavel came in the morning.’

In adverbial PPs like *zřídka*, the noun is not visible but there are adverbial PPs in which the noun of the paradigm *město* is expressed overtly; consider *kol* in *okolo* (37) and *kolem* (38). The P *o* in *okolo* is directional because it assigns accusative and this is a dynamic case. Hence, (37a) with the dynamic predicate is grammatical, in contrast to (37b) with the stative predicate.

- (37) a. *Jan šel o-kol-o aut-a.*
 Jan went about-circle-acc.sg car-gen.sg
 ‘Jan was going around the car.’
- b. **Jan stojí o-kol-o aut-a.*
 Jan stands about-circle-acc.sg car-gen.sg

In the PP *kol-em*, in addition to the noun *kol*, there is a covert Dir (and Loc) because prepositionless instrumental expresses the path meaning, as shown in (38c). For this reason, (38a) with the dynamic *šel* is grammatical and (38b) with the stative *stojí* ungrammatical.

- (38) a. *Jan šel kol-em aut-a.* b. **Jan stojí kol-em aut-a.*
 Jan went circle-inst.sg car-gen.sg Jan stands circle-inst.sg car-gen.sg
 ‘Jan was going around the car.’
- c. *Jan šel les-em*
 Jan went wood-inst
 ‘Jan was going through the wood.’

It seems that given its path lexicosemantic properties, *kolo* ‘circle’ can be combined only with directional Ps. Although *o* also assigns locative, there is no P *o-kol-e* in Czech, with the locative *e* because locative is a stative case.

Okolo and *kolem* can function not only as an adverbial but also as a preposition. As already discussed above, prepositional complements with intrinsic lexical content can take a complement. In this respect, PPs *okolo* and *kolem* behave as expected. Since they contain a full lexical noun *kolo*, they can take a genitive complement.

The next argument for the presence of a covert noun is based on Doetjes (1997), who argues that quantificational adverbs contain nominal material which forms the restrictor of the tripartite quantificational structure: Q [_{restrictor} noun][_{nucleus} VP]. According to Doetjes, this is the reason why Q-adverbs cannot combine with nouns. Example (39) shows that this holds for *zřídka*, which is a Q-adverb. *Zřídka* cannot combine with the noun in (39b), only with vP (39a). However, if *zřídka* is replaced by the adjective *řídka*, the phrase becomes grammatical.

- (39) a. *Zřídka zpívá nahý.* b. **zřídka píseň* c. *(v rádiu) řídká píseň*
 seldom sings naked seldom song (in radio) rare song
 ‘He seldom sings naked.’

The same also holds for the Q-adverb *často*, which probably contains a covert noun of the paradigm *město* as well; consider the ending *o*. In the Czech *často*, the noun is not visible but

it is expressed overtly e.g. in Russian, as shown by the masculine *raz* in (41a), and in German, as shown by the noun *mal* with the genitive *-s* in (41b).¹⁹

- (40) a. *Často zpívá doma.* b. **často píseň* c. *častá píseň*
 often sings at home often song frequent song
 ‘He often sings at home.’
- (41) a. *mного раз* b. *oft-mals*
 many time often-times
 ‘often’ ‘often’

Table (42) summarizes PPs of the type *zřídka* and linearizes their syntactic structure. *P* marks the covert preposition. The table again shows that the ability of N to select a complement depends on the presence of intrinsic lexicosemantic features on N.

(42)

Dir	Loc	A	N	case	complement of N
na		řídka		o	
	P	řídce		e	
z		řídka		a	
P			kol	em	auta
o			kol	o	auta
na			míst	o	auta
P		větš	in	ou	aut

Ztama type

In this type of PPs, the covert noun of the neuter paradigm *město* is combined with adverbs, concretely, with the wh-adverb *kam* ‘where’ in *z-kam-a* ‘from where’, and with the deictic adverb *tam* ‘there’ in *z-tam-a* ‘from there’. These PPs bear the genitive ending *a* of the paradigm *město*, which is assigned by *z*.

Some evidence that there is a noun of the paradigm *město* comes from Old Czech data. In Old Czech, there were adverbs *sem-o*, *tam-o* (see Rusínová 1984), bearing the ending *o*, which is identical with the nominative and accusative case of the paradigm *město*.

An argument for the presence of a covert noun in wh-adverbs can be found in crosslinguistic data. As noted by Caha & Medová (2009), Vangsnes (2008) shows that Scandinavian wh-phrases ‘how’ contain an abstract nominal morpheme, dubbed ‘WAY’.

¹⁹ In Czech, there are also instrumental Q-adverbs, as (ia), derived from feminine nouns (ib).

(i) a. *většin-ou* b. *většin-a*
 most-inst.f.sg most-nom.f.sg
 ‘mostly’ ‘most (of)’

According to Kayne (2004), *here* and *there* are demonstratives that modify the empty noun PLACE which has a null determiner, as shown in (43a). PLACE can be overt in some dialects of English. The same also holds for Czech, as demonstrated in example (43b). Thus, the PP *ztama* may have structure (43c).

- (43) a. [_{DP} THAT [_{NP} there PLACE]]
 b. tam-to místo
 there-that place
 c. [_{TpP} T_P-Dir-Z [_{DirP} Dir-z [_{LocP} Z [_{DP} [tam] N-a]]]]
-

Alternatively, one can decompose *tam* into *t-a-m* and analyze *t* as a deictic morpheme and *m* as the noun N (the place). In a similar fashion, one can decompose e.g. the wh-adverb *k-a-m* ‘where’, where *k* is a question morpheme, *s-e-m* ‘here’, where *s* is a deictic morpheme expressing proximity, or *on-a-m* ‘over there’, where the pronominal *on* expresses distality. There are two arguments supporting the view that *m* spells out the noun in PPs. First, in Old Czech, *m* formed m-participles from verbs (Rusínová 1984) and it is well known that participles exhibit nominal properties. Second, according to Rejzek (2001), the noun *pásmo* ‘zone/tape’ containing *m* is possibly derived from the Indo-European verbal morpheme *pes-*, *pēs-* ‘fly/flap’.

How is case spelled out in the case of the covert prepositional complement? We know that the prepositional complement agrees with T_P and that if it is overt, it bears the case ending. This is illustrated for the proper name *Praha* in PP *do Prahy* in example (44a) and for the nominal morpheme (*e*)*k* in PP *do předku* in (44b). However, in the case of the covert noun, case cannot be spelled out in this way. I propose that in such a case, case is spelled out in accordance with the linearized syntactic structure, i.e. on the closest overt element. Concretely, if there is no modifier in DP, case is spelled out on the preposition because it is the closest overt element, as shown for PP *dopředu* by structure (44c). If a modifier is present in DP, e.g. an adjective, case is spelled out on the modifier, as shown for PP *zřídka* in (44d). Nothing changes on it, if the closest overt element is an adverbial modifier, as demonstrated for *ztama* in (44e). If *tam* is decomposed, as suggested above, the spellout will be identical to the spellout in (44e) because *m* represents the noun and this is the closest overt element for the case ending; consider (44f).

- (44) a. [_{TpP} T_P-Dir₂-do₁ [_{DirP} t₂-t₁ [_{LocP} t₁ [_{DP} Prah-y]]]] = (1b)

- b. [_{TpP} T_P-do₂-před₁ [_{DirP} t₂-t₁ [_{LocP} t₁ [_{DP} k-u]]]] = (27b)

- c. $[_{\text{TPP}} \text{TP-dO}_2\text{-před}_1 [_{\text{DirP}} \text{t}_2\text{-t}_1 [_{\text{LocP}} \text{t}_1 [_{\text{DP}} \text{-u}]]]]$ =(1a)
- d. $[_{\text{TPP}} \text{TP-Dir}_2\text{-Z}_1 [_{\text{DirP}} \text{t}_2\text{-t}_1 [_{\text{LocP}} \text{t}_1 [_{\text{DP}} [\text{říd}k] \text{-a}]]]]$ =(35a)
- e. $[_{\text{TPP}} \text{TP-Dir}_2\text{-Z}_1 [_{\text{DirP}} \text{t}_2\text{-t}_1 [_{\text{LocP}} \text{t}_1 [_{\text{DP}} [\text{tam}] \text{-a}]]]]$ =(3g)
- f. $[_{\text{TPP}} \text{TP-Dir}_2\text{-Z}_1 [_{\text{DirP}} \text{t}_2\text{-t}_1 [_{\text{LocP}} \text{t}_1 [_{\text{DP}} \text{t-a-m-a}]]]]$ =(3g)

3. Conclusion

In order to accommodate complexity of Czech PPs, I have argued that PPs have a layered internal structure. Concretely, the structure looks as follows:

$[_{\text{TPP}} \text{TP} (_{\text{unval}\phi\text{-Fs, valT-F}}) [_{\text{DirP}} (\text{DegP}) \text{Dir} [_{\text{LocP}} (\text{DegP}) \text{Loc} [_{\text{DP}} (_{\text{val}\phi\text{-Fs, unvalT-F}}) (\text{Modifier}) \text{N/CP}]]]]]$

On the top of the extended projection of P, the prepositional tense head T_P is placed. This head bears a valued T-feature and unvalued ϕ -features. Since the prepositional complement bears an unvalued T-feature and valued ϕ -features, the prepositional case is a reflection of the operation Agree between T-features and ϕ -features of the complement and the head T_P . The resulting prepositional case is determined by semantic features of heads incorporated into T_P . I have shown that the prepositional complement can be overt as well as covert and provided a few arguments for the covert noun in Czech PPs.

References

- Áfarli, Tor A. 1997. Dimensions of phrase structure: the representation of sentence adverbials. *Motskrift*. Institutt for nordistikk og litteraturvitenskap, NTNU. 91–113.
- Asbury, Anna, Berit Gehrke & Veronika Hegedús. 2007. One Size Fits All: Prefixes, Particles, Adpositions and Cases as Members of the Category P. In C. Keskin (ed.) *UiL OTS Yearbook 2006*. 1–17.
- Baker, Mark C. 2008. *The Syntax of Agreement and Concord*. Cambridge: Cambridge University Press.
- Bierwisch, Manfred. 1988. On the Grammar of Local Prepositions. In M. Bierwisch, W. Motsch & I. Zimmermann (eds.) *Studia grammatica 29*. Berlin: Akademie-Verlag. 1–65.
- Biskup, Petr. to appear. P(refixe)s and P(reposition)s. In B. Dvořák (ed.) *Proceedings of the 2nd Congress of Slavic Linguistic Society*.
- Biskup, Petr. 2009. Prefixes as Prepositions and Multiple Cases. In G. Zybatow, U. Junghanns, D. Lenertová & P. Biskup (eds.) *Studies in Formal Slavic Phonology, Morphology, Syntax, Semantics and Information Structure. Proceedings of FDSL 7, Leipzig 2007*. Frankfurt am Main: Peter Lang. 3-17.
- Bošković, Željko. 2004. Object Shift and the Clause/PP Parallelism Hypothesis. In B. Schmeiser, V. Chand & A. Kelleher (eds.) *Proceedings of the 23th West Coast Conference on Formal Linguistics*. Somerville, MA: Cascadilla Press. 101–104.

- Brennan, Jonathan (2008) Irish Prepositions: Agreement and Impoverishment. In Ch. B. Chang & H. J. Haynie (eds.) *Proceedings of the 26th West Coast Conference on Formal Linguistics*. Somerville, MA: Cascadilla Proceedings Project. 105–113.
- Caha, Pavel. 2009. The jungle of the Czech local cases. Ms., handout from *Workshop on Spatial Expressions*, University of Tromsø.
- Caha, Pavel & Lucie Medová. 2009. Czech Adverbs as Case-marked Adjectives. In G. Zybatow, U. Junghanns, D. Lenertová & P. Biskup (eds.) *Studies in Formal Slavic Phonology, Morphology, Syntax, Semantics and Information Structure. Proceedings of FDSL 7, Leipzig 2007*. Frankfurt am Main: Peter Lang. 31-42.
- Chomsky, Noam. 2004. Beyond Explanatory Adequacy. In A. Belletti (ed.) *Structures and beyond*. Oxford, New York: Oxford University Press. 104–131.
- Demirdache, Hamida & Miriam Uribe-Etxebarria. 1997. The syntax of temporal relations. A uniform approach to tense and aspect. In E. Curtis, J. Lyle & G. Webster (eds.) *Proceedings of the 16th West Coast Conference on Formal Linguistics*. Stanford: CSLI Publications. 145–159.
- den Dikken, Marcel. 2006. On the functional structure of locative and directional PPs. Ms., CUNY.
- Doetjes, Jenny. 1997. *Quantifiers and Selection. On the distribution of quantifying expressions in French, Dutch and English*. The Hague: Holland Academic Graphics.
- Emonds, Joseph E. 2007. Czech Cases and the Syntacticon: Poznámky k, o, okolo, nad něčím a pro někoho. In M. Dočekal, P. Karlík, & J. Zmrzliková (eds.) *Czech in Generative Grammar*. München: Lincom. 81–103.
- Filip, Hana. 2000. The Quantization Puzzle. In C. Tenny & J. Pustejovsky (eds.) *Events As Grammatical Objects*. Stanford: CSLI. 39–96.
- Filip, Hana. 2003. Prefixes and the Delimitation of Events. *Journal of Slavic Linguistics* 11: 55–101.
- Gehrke, Berit. 2008. Ps in motion. Doctoral dissertation, University of Utrecht.
- Jackendoff, Ray. 1983. *Semantics and Cognition*. Cambridge, Mass.: The MIT Press.
- Kayne, Richard S. 2004. Here and there. In C. Leclère, E. Laporte, M. Piot, & M. Silberztein (eds.) *Lexique, Syntaxe et Lexique-Grammaire/Syntax, Lexis & Lexicon-Grammar: Papers in Honor of Maurice Gross*. Amsterdam: John Benjamins. 253–275.
- Kracht, Marcus. 2002. On the semantics of locatives. *Linguistics and Philosophy* 25: 157–232.
- Lebeaux, David. 1988. Language Acquisition and the Form of Grammar. Doctoral dissertation, University of Massachusetts at Amherst.
- Mluvnice češtiny 2* (1986). Praha: Academia.
- Pesetsky, David & Ester Torrego. 2004. Tense, Case, and the Nature of Syntactic Categories. In J. Guéron & J. Lecarme (eds.) *The syntax of Time*. Cambridge, Mass.: The MIT Press. 495–539.
- Pesetsky, David & Ester Torrego. 2006. Probes, Goals and Syntactic Categories. In Y. Otsu (ed.) *Proceedings of the Seventh Tokyo Conference on Psycholinguistics*. Tokyo: Hituzi Syobo Publishing Company. 25–61.
- Rejzek, Jiří. 2001. *Český etymologický slovník*. Voznice: Leda.
- Rusínová, Zdena. 1984. *Tvoření staročeských adverbii*. Brno: UJEP.
- Součková, Kateřina. 2004. Measure prefixes in Czech: Cumulative na- and delimitative po-. Master thesis, University of Tromsø.
- Vangsnes, Øystein Alexander. 2008. Decomposing manner *how* in colloquial Scandinavian. *Studia Linguistica* 62: 119–141.
- van Riemsdijk, Henk & Riny Huybregts. 2002. Location and locality. In M. van Oostendorp & E. Anagnostopoulou (eds.) *Progress in Grammar: Articles at the 20th Anniversary of*

- the Comparison of Grammatical Models Group in Tilburg*. Amsterdam: Meertens Instituut. 1–23.
- Zhang, Niina Ning. 2002. Movement within a spatial phrase. In H. Cuyckens & G. Radden (eds.) *Perspectives on Prepositions*. Tübingen: Max Niemeyer. 47–63.
- Ziková, Markéta & Mojmir Dočekal. 2007. Prostorové prefixy v češtině a omezení na dvojitou prefixaci. Paper presented at the conference *Grammar & corpora 2*, Liblice u Prahy, September 25–27 2007.
- Zwarts, Joost & Yoad Winter. 2000. Vector Space Semantics: A Model-Theoretic Analysis of Locative Prepositions. *Journal of Logic, Language, and Information* 9: 169–211.