

# On the functional structure of locative and directional PPs

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On the basis of a detailed empirical investigation of the syntax of locative and directional adpositional phrases in Dutch, this paper seeks to establish the structure of the lexical and extended functional projections of  $P_{Loc}$  and  $P_{Dir}$  and its parallels with the lexical and functional structure of clauses and nominal phrases, thereby bringing the adpositional domain fully in line with the verbal and nominal domains *qua* structural architecture. Among other things, the paper lays out in detail the base structure and syntactic derivation of locative and directional pre-, post- and circumpositional phrases, discusses the restrictions on movement inside and out of the (extended) projections of  $P_{Loc}$  and  $P_{Dir}$ , sheds new light on the relationship between P and case, analyses the distribution of modifiers in adpositional phrases, and presents an extended case for the existence of adpositions as a *lexical* category.

## 1 Introduction

Koopman's (2000) investigation of the structure of Dutch PPs is a significant milestone in generativists' thinking about adpositions.<sup>1</sup> By showing that there is quite a bit more to the structure of the PP than had previously been assumed,<sup>2</sup> and giving P a full-fledged functional extended projection, Koopman explicitly assimilates P to the relatively uncontroversial lexical categories A, N and V, thereby making P a thoroughbred member of the class of lexical categories, and she simultaneously replicates in the adpositional domain a portion of the functional skeleton familiar from the extended projections of verbs and nouns, furthering the research program that subscribes to the view that all lexical categories have the same basic array of functional categories in their extended projections.<sup>3</sup> Koopman's study has its limitations, though. It is too sketchy and fragmentary in many places, not systematic enough to really nail the points that it is striving to make.

Taking Koopman's seminal work as its point of departure, this paper seeks to flesh out the structure of the adpositional phrase in detail, taking its cue, like Koopman, from the Dutch facts (which will be substantially amplified beyond Koopman's observations). The outcome of this investigation will end up strongly supporting Koopman's research program, developing it in several important ways. Specifically, the paper will — among other things — isolate counterparts to Aspect, Tense and Comp in the adpositional domain, it will identify both locative and directional Ps as lexical categories ( $P_{Loc}$  and  $P_{Dir}$ , respectively), each with its own array of functional categories in its extended projection, and it will make a case for the idea that these various functional categories are *selectively* present, in an 'ever increasing circles' kind of way. That is, spatial P will always project its own lexical projection, PP, but beyond that, it can (depending on certain factors and with specific consequences that will be addressed) be merged directly with a higher lexical category, forgoing all functional structure of its own, or merge with a subset of the functional categories in its extended projection. Functional structure, then, is called upon selectively, not omnipresent (*contra* Cinque 1999, for instance).

The paper is organised as follows. In sections 2 and 3, I will survey the landscape of Dutch locative and directional adpositional phrases against the background of Koopman's (2000) analysis, which is critically reviewed along the way. In section 4, I will develop the structure of directional PPs beyond the end point of Koopman's discussion. Section 5 presents a detailed investigation of the structural parallelism between verbal, nominal and adpositional extended projections, and gives a principled rationale for the typology of complementation structures in directional adpositional phrases. Finally, section 6 concludes the paper.

1 The traditional term 'adposition' is a cover-all for pre-, post- and circumpositions; since, however, its initial coincides with that of adjectives, and since arguably all adpositional phrases are underlyingly prepositional, the label 'P' will be used throughout.

2 Van Riemsdijk (1990) is an early plea for the existence of functional prepositions projecting functional structure outside the lexical PP.

3 Early arguments to the effect that the structures of noun phrases and clauses are highly similar are found in Szabolcsi (1983, 1994), Abney (1987). I will return to the matter in more detail below. On 'extended projection', see Grimshaw (1991, 2000).

## 2 The landscape of Dutch locative and directional PPs: A bird's eye view

### 2.1 PP-types

The landscape of Dutch locative and directional adpositional phrases is complex, which is what makes it such a fertile domain of investigation into the functional structure of PPs. The following sets of examples are organised in such a way that, within each item, the a-sentences illustrate the *locative* use of a particular PP-type (if available), whereas the b-sentences instantiate its *directional* use. The items are ordered from the simplest, most productive types (the simple *prePPs* and *postPPs*) to the more complex cases.<sup>4</sup>

- |     |    |  |   |  |
|-----|----|--|---|--|
| (1) | a. | <i>prepositional, locative</i><br>hij zit in de stoel<br>he sits in the chair  | hij ligt op de bank<br>he lies on the couch         | hij staat voor de deur<br>he stands before the door                          |
|     | b. | <i>prepositional, directional</i><br>hij klimt in de stoel<br>he climbs in(to) the chair                                       | hij springt op de bank<br>he jumps on(to) the couch | hij rijdt voor de deur<br>he drives before the door                          |
| (2) | a. | <i>postpositional, locative</i> — N/A<br>*hij zit de stoel in<br>he sits the chair in  | *hij ligt de bank op<br>he lies the couch on        | *hij staat de deur voor<br>he stands the door before                         |
|     | b. | <i>postpositional, directional</i><br>hij klimt de stoel in<br>he climbs the chair in(to)                                      | hij springt de bank op<br>he jumps the couch on(to) | *hij rijdt de deur voor<br>he drives the door before                         |
| (3) | a. | <i>circumpositional, locative</i><br>de schutting staat om het huis heen<br>the fence stands around the house PRT              |   | ?de kabel ligt onder de brug door<br>the cable lies under the bridge through |
|     | b. | <i>circumpositional, directional</i><br>hij loopt om het huis heen<br>he walks around the house PRT                            |   | hij loopt onder de brug door<br>he walks under the bridge through            |
| (4) | a. | <i>complex postpositional, locative</i> — N/A<br>*de auto staat de molen voorbij<br>the car stands the mill before-by ('past') |   | *de kabel ligt de brug onderdoor<br>the cable lies the bridge under-through  |
|     | b. | <i>complex postpositional, directional</i><br>de auto rijdt de molen voorbij<br>the car drives the mill before-by ('past')     |   | hij loopt de brug onderdoor<br>he walks the bridge under-through             |
| (5) | a. | <i>complex prepositional, locative</i><br>de auto staat voorbij de molen<br>the car stands before-by ('past') the mill         |   | de auto staat tegenover het huis<br>the car stands against-across the house  |
|     | b. | <i>complex prepositional, directional</i><br>de auto rijdt voorbij de molen<br>the car drives before-by ('past') the mill      |   | *de auto rijdt tegenover het huis<br>the car drives against-across the house |

<sup>4</sup> See Helmantel 2002 for more detailed illustration. I should note right at the outset that when a particular sentence pair is seen to exhibit word-order flexibility (e.g., (4b) *de auto rijdt voorbij de molen* ~ (5b) *de auto rijdt de molen voorbij*), the two sentences making up the pair are not necessarily fully semantically equivalent — though the meaning differences between the individual members of a pair may not always be very easy to circumscribe.



In combination with the verb *lopen* ‘walk’, an *in*-PP with a *directional* interpretation (‘into *x*’) must be *postpositional* (7); but in the complement of the verb *klimmen* ‘climb’ (8), an *in*-PP supports a *directional* interpretation in both its *pre-* and *postpositional* incarnations, and the same is true for the *op*-PP in (9). For many speakers, choice of verb is key in this connection. While *klimmen* allows prepositional *op*-PPs to be interpreted *directionally* (as in (9a), which, like (8a), is ambiguous between a *locative* and a *directional* reading), the same *op*-PP resists a *directional* interpretation in its prepositional incarnation with a verb like *wandelen* ‘walk’ for most speakers that I have asked (see (10a); *postpositional directional op* is fine for everyone: (10b)). But I have also found speakers who accept (10a) on a *directional* interpretation. So for such speakers, (10) behaves exactly like (8) and (9). It will be important to bear in mind, then, that the (un)availability of a *directional* interpretation for a simple *prePP* (*a*) depends on the choice of verb selecting the PP, and (*b*) is subject to speaker variation within the Dutch-speaking world. I will return to these points later in the paper.

Returning to the broad generalisations in (6a,b), let me point out that, as a matter of fact, these generalisations are not entirely surface true: an important qualification must be made for a particular type of P-complement, the class of so-called ‘R-words’. ‘R-word’ is Van Riemsdijk’s (1978) label for those pronominal arguments of P that obligatorily surface to the left of P (even when the P in question is otherwise strictly prepositional) and have the option of extracting from PP (something which other P-complements typically cannot do).<sup>6</sup> The examples in (12), featuring *naast* ‘beside’, are illustrative for the entire class.

- |      |    |  |                            |
|------|----|--|----------------------------|
| (12) | a. | Jan zat naast het meisje/de deur<br>Jan sat next.to the girl/the door                  | unambiguous: locative only |
|      | b. | *Jan zat het meisje/de deur naast<br>Jan sat the girl/the door next.to                 | ungrammatical              |
|      | c. | Jan zat ⟨*haar/*het⟩ naast ⟨haar/*het⟩<br>Jan sat her/it beside her/it                 |                            |
|      | d. | Jan zat ⟨er⟩ naast ⟨*er⟩<br>Jan sat there <sub>[+R]</sub> beside there <sub>[+R]</sub> |                            |

Throughout, therefore, any and all generalisations about word order in Dutch locative and directional PPs should be qualified with reference to the behaviour of R-word PPs, which are virtually always *postpositional*.<sup>7</sup>

It is immediately apparent from the facts in (1)–(5) that *directional* PPs show a significantly greater degree of variation in surface patterns than do *locative* PPs. What is also clear from (1)–(5) is that the *directional* PP-set is almost *in toto* a superset of the *locative* PP-set — only in the case of *tegenover* ‘against-across, i.e., across from’ do we find that a particular token of a specific PP-type occurs only in a *locative* context, not in a *directional* one. There are also tokens of specific PP-types which are ungrammatical in both *locative* and *directional* contexts: *voor* ‘before, in front of’ and *naast* ‘next to’, for instance, are never used *postpositionally* (R-words aside), so both the *locative* and the *directional* versions of (2a,b) fail for *voor*.

6 The term ‘R-word’ was transparently chosen (on the analogy of ‘wh-word’) on account of the fact that all members of the class of R-words in Dutch have an *r* in them: *er* ‘there’, *daar* ‘there’, *waar* ‘where’, *hier* ‘here’, *ergens* ‘somewhere’, *nergens* ‘nowhere’, *overal* ‘everywhere’. Obviously, though, that is by no means a defining characteristic of R-words (cf. *haar* in (12b), which likewise has an *r* in it but does not behave like an R-word).

7 An important systematic exception are ‘serial PPs’ of the type *from x to y* — these, in fact, force *prepositional* order even when both constituent PPs contain an R-word, as shown in (ib,c). Helmantel (2002:section 6.2.2) discusses a few other contexts in which R-words appear in *prepositional* PPs.

- |     |    |  |
|-----|----|--|
| (i) | a. | van het kastje naar de muur<br>from the cupboard to the wall |
|     | b. | van hier naar daar<br>from here to there                     |
|     | c. | *hiervan daarnaar<br>here-from there-to                      |

These remarks should make the reader aware, right from the outset, that there is an important pre-theoretical sense in which directional PPs are ‘built upon’ or ‘extensions of’ locative PPs, and also that there is a vast amount of idiosyncratic lexical variation among individual adpositions with respect to their syntactic patterning. Lexical idiosyncrasy is never a good guiding light in the development of an analysis. It will make sense, therefore, to downplay lexical variation to the extent that we can, and to concentrate instead on what I take to be a significant property of the relationship between locative and directional adpositional phrases: the fact that the latter are, in some sense to be made precise, ‘extensions’ of the former.

Koopman’s (2000) analysis of locative and directional adpositional phrases embodies this insight: it considers directionality to be the inclusion in the extended projection of P of a single functional head, ‘Path’, on top of some locative adpositional constituent. My own analysis, which builds on Koopman’s seminal work, builds in the idea that directional PPs are ‘built on’ locative PPs in a somewhat different way, recognising two types of *lexical* P (locative and directional), each with their own array of functional categories in their extended projection, with the directional P lexically selecting for a locative adpositional structure as its complement.

### 3 The adpositional landscape charted out: First explorations

#### 3.1 Locative PPs

Koopman (2000) presents an analysis of locative and directional PPs wherein the lexical core of the structure of both PP–types is assumed to be formed by a projection of a *lexical* P–head. This lexical head has an array of functional projections in its extended projection. Most of these projections bring in attributes of the *locative* PP: a PlaceP that provides a landing-site for R-pronouns (SpecPlaceP), a DegP(Place) whose specifier position serves as the insertion position for modifiers of the type *tien meter* ‘ten metres’, and a CP(Place) that brings in a second potential landing-site for R-words, to the left of degree modifiers such as *tien meter*.

- (13) *Koopman’s base structure for locative PPs*<sup>8</sup>  
 $[_{CP(Place)} Spec_{[+R]} [C(Place) [_{DegP(Place)} MOD [Deg(Place) [_{PlaceP} Spec_{[+R]} [Place [_{PP} P_{Loc} DP]]]]]]]]$

8 Koopman’s structure for locative PPs in addition features an AgrP just outside the lexical PP. She resorts to movement to SpecAgrP in an attempt to account for Q–float facts: *met ons allemaal* ‘with us all’ is assumed to result from movement of *ons* ‘us’ to a higher A–position, stranding the quantifier *allemaal* ‘all’ along the way (as in Sportiche’s 1988 analysis of Q–float). The Q–float argument, when taken seriously, will actually require more than just an AgrP between Place and PP. Q–float stranding quantifiers in complement positions is generally impossible (*\*I saw the men all*, same in Romance; cf. Sportiche 1988), for whatever reason; so if *allemaal* in *met ons allemaal* ‘with us all’ is a floating quantifier, it cannot have been stranded in P–complement position: instead, it must have been stranded in a low specifier position, with the pronoun raising up further to the next specifier. The situation then comes to parallel what we find in clauses in Dutch: *all* complements (whether pronominal or full-nominal) raise to some VP–external specifier position; weak pronouns take an additional step beyond that point, to a higher specifier that is still in the ‘middle field’. Viewed this way, and assuming that movement to a specifier is tantamount to movement to a *functional* specifier position (given that lexical categories cannot serve as attractors — they have no ‘EPP property’, in current terminology), the Q–float facts in PPs would diagnose *two* functional projections between Place and PP.

However, there is reason to believe that in PPs like *met ons allemaal* ‘with us all’ we are *not* in fact dealing with Q–float. The key fact here is that ‘Q–float’ remains possible with heavy stress on the pronoun (*met ONS allemaal*, *niet met HEN allemaal* ‘with US all, not with THEM all’): we know independently that stressed pronouns behave like full DPs, hence are not expected to take the additional movement step beyond SpecAgrP that weak pronouns are obliged to take. The fact that ‘Q–float’ is still possible with stress on the pronoun then suggests that it is *not* the result of stranding of Q under raising of the pronoun; instead, the [pronoun Q] order is presumably the result of a local movement operation *within* the confines of the pronoun’s maximal projection. And if that is what is going on in the derivation of *ons allemaal* ‘us all’, the ‘Q–float’ facts show us nothing about the extended projection of P. I will not include Koopman’s AgrP in the structure of the locative PP, therefore.

With the aid of the structure in (13), Koopman straightforwardly accounts for the fact that (14b) has two grammatical variants, with the R-word *er* on either side of *tien meter*:<sup>9</sup> when *er* appears to the right of *tien meter*, it has raised to SpecPlaceP; with *er* to the left of *tien meter*, it sits in SpecCP(Place). From this latter position, the R-word is free to escape from PP altogether (as in (15) with the R-word *waar*). And since non-R-word complements of P never reach the SpecCP(Place) position, they will never have a chance to extract out of the locative P's extended projection. This accounts for the ungrammaticality of (15) with [-R] *die*.

- (14) a. [tien meter naast de deur] heeft Jan gezeten  
 ten metre next.to the door has Jan sat  
 $[_{CP(Place)} C(Place) [_{DegP(Place)} tien\ meter\ [Deg(Place) [_{PlaceP}\ Place\ [_{pp}\ naast\ de\ deur}]]]]]$
- b. [*er*] tien meter [*er*] naast] heeft Jan gezeten  
 there<sub>[+R]</sub> ten metre there<sub>[+R]</sub> next.to has Jan sat  
 $[_{CP(Place)} \langle er_i \rangle [C(Place) [_{DegP(Place)} tien\ meter\ [Deg(Place) [_{PlaceP}\ \langle er_i \rangle [Place\ [_{pp}\ naast\ ec_i]]]]]]]]]$
- (15) de deur {*\*die*/*waar*} Jan naast heeft gezeten  
 the door that/where<sub>[+R]</sub> Jan next.to has sat  
 'the door that Jan sat next to'

The fact that Dutch locative simple PPs are systematically *prepositional* except in R-word cases is taken care of with the aid of two assumptions. First, Koopman assumes that full-DP complements to  $P_{Loc}$ , such as *de deur* 'the door', stay *in situ*, to the right of P's base position, whence the ungrammaticality of the variant of (16) with *naast* immediately following *de deur*. Secondly, she assumes that  $P_{Loc}$  can raise no higher than Place, hence can never surface to the left of raised R-words, which are no lower than SpecPlaceP (cf. (16b)). That  $P_{Loc}$  never raises beyond Place to Deg(Place) or C(Place) is also instrumental in Koopman's account of the fact that locative Ps cannot incorporate into the verbal cluster: since  $P_{Loc}$  can raise no further than Place, it can never get to a position local to the verb selecting CP(Place), hence incorporation of  $P_{Loc}$  into the verbal cluster is out of the question. This explains the ungrammaticality of (16) with *naast* sandwiched in between the two verbs that make up the verbal cluster (*\*... heeft naast gezeten*).

- (16) a. ik geloof dat Jan *naast* de deur *\*naast* heeft *\*naast* gezeten  
 I believe that Jan next.to the door next.to has next.to sat
- b. ik geloof dat Jan *\*naast* er *naast* heeft *\*naast* gezeten  
 I believe that Jan next.to there<sub>[+R]</sub> next.to has next.to sat

Note that in order for this account of the ban on incorporation of  $P_{Loc}$  into the verbal cluster to go through, it must be assumed that locative PPs are never 'just' PlacePs — if they could be as small as PlaceP, then, with  $P_{Loc}$  raising to Place, there should be no locality problem obstructing incorporation of P into the verbal cluster.

One last thing before we move on to directional PPs. From the fact that (14b) with the R-pronoun placed to the left of *tien meter* (concretely, *er tien meter naast*) is grammatical, we can conclude that pied-piping movement of the entire CP(Place) is possible. That much is straightforward. But it would seem that the other examples in (14) are ambiguous, nothing else said, between fronting of just DegP(Place), or topicalisation of the entire CP(Place). And of course there are maximal projections below DegP(Place) as well which one might imagine moving as a constituent. For instance, we might imagine moving just the lexical PP or PlaceP and leaving everything else behind:

9 I chose examples featuring topicalisation of the entire adpositional phrase here to make sure, for the R-word cases, that the R-word is still physically inside the PP and has not scrambled out of it.

- (17) a. \*[naast de deur] heeft Jan tien meter gezeten  
           next.to the door has Jan ten metre sat  
       b. \*[er naast] heeft Jan tien meter gezeten  
           there next.to has Jan ten metre sat

The sentences in (17) are crashingly bad. To capture this in an analysis of locative PPs availing itself of (9a), it seems that we must forbid movement of any of the maximal projections embedded inside CP(Place). This is effectively what Koopman assumes: she hypothesises that, while CP(Place) is mobile (incontrovertibly so), lower (extended) projections of P cannot be moved.<sup>10</sup>

- (18) CP(Place) is mobile; lower projections cannot be moved

This takes care of (17) immediately.<sup>11</sup> With (18) in place, we are basically done with locative *simple* PPs.

We are not quite done with locative PPs *tout court*, however: the reader will recall that circumpositional and complex prepositional locative PPs are possible as well (cf. (3a) and (5a), repeated below, along with (4a), which is impossible).

- |     |    |   |   |
|-----|----|---|---|
| (3) | a. | <i>circumpositional, locative</i>             |   |
|     |    | de schutting staat om het huis heen           | ?de kabel ligt onder de brug door       |
|     |    | the fence stands around the house PRT         | the cable lies under the bridge through |
| (4) | a. | <i>complex postpositional, locative</i> — N/A |   |
|     |    | *de auto staat de molen voorbij               | *de kabel ligt de brug onderdoor        |
|     |    | the car stands the mill before-by ('past')    | the cable lies the bridge under-through |
| (5) | a. | <i>complex prepositional, locative</i>        |   |
|     |    | de auto staat voorbij de molen                | de auto staat tegenover het huis        |
|     |    | the car stands before-by ('past') the mill    | the car stands against-across the house |

There is no explicit discussion of locative complex PPs in Koopman's paper, which, in its discussion of complex PPs, confines itself to their directional incarnations. I will briefly revisit locative (3a) and (5a) further below, once I have laid out Koopman's analysis of directional PPs, to which I turn next. The discussion here is quite a bit more complex and variegated than it was in the case of locative PPs, as we will see.

10 There is apparently no parallel with the verbal domain here. After all, Dutch is famous (cf. Den Besten & Webelhuth 1987) for its 'remnant topicalisation', apparently involving fronting of the bare VP. It is likely that even the barest cases of remnant topicalisation (cf. e.g. *geven zou Jan Marie dat boek waarschijnlijk nooit* 'give would Jan Marie that book probably never') do not instantiate fronting of the lexical VP but instead involve topicalisation of some functional projection dominating VP from which all arguments have been extracted. But whatever the exact nature of the node undergoing remnant topicalisation in such examples, it seems fairly clear that this node is not CP — after all, one would be hard pressed manoeuvring all non-verbal material outside CP, even on a highly sophisticated, 'Italianate' outlook on the cartography of the left periphery. It does seem to be possible, therefore, to pied-pipe smaller-than-CP extended projections of *verbs* — and in this respect, there seems to be a breakdown of parallelism between the verbal and adpositional domains.

11 R-pronouns can escape from CP(Place) altogether, raising via SpecCP(Place): see (ia). Nothing else said, we now predict that it should be possible to front a modifier like *tien meter* along with the adposition, with the R-pronoun left in the 'Mittelfeld', as in (ib) — but (ib) is entirely impossible (whereas (ib') is at least marginally possible), for reasons that are very difficult to fathom, not just from Koopman's perspective but quite in general. I have no solution to offer for this problem, which I would like to put high on the agenda of future research into the syntax of PPs.

- |     |    |   |   |
|-----|----|---|---|
| (i) | a. | Jan heeft er nog nooit tien meter naast gezeten               |   |
|     |    | Jan has there <sub>[+R]</sub> yet never ten metre next.to sat |   |
|     | b. | *[tien meter naast] heeft Jan er nog nooit gezeten            | b'. ?naast heeft Jan er nog nooit gezeten           |
|     |    | ten metre next.to has Jan there <sub>[+R]</sub> yet never sat | next.to has Jan there <sub>[+R]</sub> yet never sat |



Koopman's (2000) analysis of directional *pre*PPs also makes sense of another selectional restriction, this time of a categorial (and categorial) nature. She argues that the need for null Path to incorporate, in conjunction with the assumption that N cannot incorporate  $\emptyset$ Path ('silent Path must attach to a  $-N$  category'<sup>12</sup>), is what rules out a directional interpretation for (21a) while still permitting a directional reading for examples of the type in (1b), above, where the head selecting PathP is verbal.

- (21) a. de weg/wandeling op de heuvel                      unambiguous: locative only  
           the road/walk<sub>N</sub> on the hill  
       b. de weg/wandeling de heuvel op                    unambiguous: directional only  
           the road/walk<sub>N</sub> the hill on

This is an important result. It is indeed the case that *pre*PPs can only receive a directional interpretation when they occur in the complement of V; in the complement of N, directional PPs must be *postpositional* — that is, generalisation (6d), which as it stands is false (because it does not hold in verbal environments), holds for adnominal PPs. Koopman's (2000) null-headed PathP structure for directional *pre*PPs derives the unavailability of a directional interpretation for a prepositional PP in N's complement. But (21b) is grammatical: a *postpositional* PP in N's complement does support a directional interpretation. This suggests, in light of Koopman's discussion of (21a), that in *postpositional* directional PPs, the Path-head is not dependent for its licensing upon an outside licenser: it gets licensed 'from within'. I will turn to this in section 3.2.3, below.

Before moving on to *postpositional* directional PPs, however, let me complete the discussion of directional *pre*PPs by briefly addressing a few remaining properties of these phrases. First, consider the fact that, just like locative *pre*Ps, directional *pre*Ps cannot incorporate into the verbal cluster — even though null Path does incorporate, of course, but without causing a stir in the surface word order. That the physical preposition cannot incorporate follows from the fact that in directional *pre*PPs, Path takes a full CP(Place) complement, with P<sub>Loc</sub>, the lexical P, being unable to reach Path, and hence being unable to ever manoeuvre itself into a position that is local to the selecting verb. The fact, then, that *voor* 'before, in front of', which is exclusively *prepositional* (recall (1) vs (2)), cannot surface in between the two verbs that make up the verbal cluster in (22) follows straightforwardly.

- (22)            ik geloof dat de taxi <✓voor> de deur <\*voor> komt <\*voor> rijden  
                   I believe that the taxi before the door before comes before drive  
                   'I believe the taxi will pull up in front of our door'

Not only in this respect, but in *all* relevant 'internal' respects, directional *pre*PPs are expected to behave exactly like locative *pre*PPs: their structures, after all, are internally entirely identical all the way up to CP(Place); there is no lexical material introduced in Path<sup>0</sup>, so the presence of PathP creates no word-order possibilities internal to the *pre*PP over and above those observed for locative *pre*PPs. This expectation is certainly fulfilled when it comes to the distribution of modifiers such as *tien meter* 'ten metres': these occur in all the same positions in directional *pre*PPs as they do in locative PPs (cf. (14)).

- (23) a. [tien meter in de boom] is Jan geklommen  
           ten metre in the tree is Jan climbed  
       b. [⟨er⟩ tien meter ⟨er⟩ in] is Jan geklommen  
           there<sub>[+R]}</sub> ten metre there<sub>[+R]}</sub> in is Jan climbed

12 Koopman suggests that Path might belong to the verbal system, which might be why it must attach to a  $[-N]$  category. A statement of this specific sort will presumably be superfluous, however: it will arguably suffice, when it comes to blocking incorporation of  $\emptyset$ Path into N, to observe that the complement of N is quite generally impermeable (cf. CNPC effects, and the ban on complementiser deletion in noun-complement clauses; Stowell 1981); see Chomsky (1986) for the hypothesis that the opacity of noun-complement clauses is due to the (stipulated) barrierhood thereof.

R-word placement and incorporation in PPs that are *strictly prepositional* AND *strictly directional* introduce a complication, however. There are not many Ps that are both exclusively directional and exclusively prepositional — *naar* ‘to’ and *tot* ‘up to’ are the only uncontroversial ones that come to mind (*richting* ‘towards’ is also prepositional, but etymologically this is not an adposition but a noun (‘direction’); I will include it in the set of examples below, but the reader should be aware that *richting* certainly is not quintessentially a P). The complication presented by these exclusively prepositional directional Ps is that they do not allow R-word complements in spatial contexts — the examples in (24b) are all ungrammatical.

- |      |    |                                    |                                       |                                |
|------|----|------------------------------------|---------------------------------------|--------------------------------|
| (24) | a. | hij rijdt naar de stad             | hij rijdt tot de grens                | hij rijdt richting de grens    |
|      |    | he drives to the city              | he drives up.to the border            | he drives direction the border |
|      | b. | *hij rijdt er naar                 | *hij rijdt er tot/toe <sup>13</sup>   | *hij rijdt er richting         |
|      |    | he drives there <sub>[+R]</sub> to | he drives there <sub>[+R]</sub> up.to | hij drives there direction     |

The ungrammaticality of (24b) is not due (or at least, not entirely) to some lexical accident involving the combination of these Ps and an R-word: interestingly, *naar* and *toe* do allow R-words to their immediate left, but not in *spatial* contexts:

- |      |    |                                   |                                       |
|------|----|-----------------------------------|---------------------------------------|
| (25) | a. | hij kijkt naar de film            | hij komt niet tot werken              |
|      |    | he looks to the movie             | he comes not to work-INF              |
|      | b. | hij kijkt er naar                 | hij komt er niet *tot/✓toe            |
|      |    | he looks there <sub>[+R]</sub> to | he comes there <sub>[+R]</sub> not to |

Koopman’s analysis of directional *prePPs* would allow us to understand this if *naar* and its ilk, i.e., the set of strictly prepositional and strictly directional Ps, were base-generated under Path<sup>0</sup>. That would have the added benefit of explaining the fact that *naar* and other such directional Ps do not double as locatives: they are not lexicalisations of P<sub>Loc</sub> or anything else in the structure up to and including CP(Place), hence they do not have any locative incarnations. This would clearly be on the right track. But unfortunately, in Koopman’s analysis of directional PPs, it actually will not do. For on Koopman’s assumptions, PathP is literally the *only* piece of structure that is exclusively directional: there is no lexical P<sub>Dir</sub>, nor are there any functional projections outside PathP in any of the structures in (20). So if we were to base-generate *naar* and its ilk in Path<sup>0</sup>, and then placed PathP in the complement of a verb that is capable of incorporating Path (see above), we would expect it to be possible for such a verb to incorporate *naar* — but as a matter of fact, strictly prepositional and strictly directional Ps such as *naar* cannot incorporate at all:

- (26) ik geloof dat Jan ⟨✓naar⟩ het bos ⟨\*naar⟩ is ⟨\*naar⟩ gelopen/gerend  
 I believe that Jan to the woods to is to walked/run

So Koopman has no obvious handle on strictly prepositional and strictly directional Ps such as *naar*: she cannot base-generate them in Path, for that would leave (26) unexplained (we will see in section 3.2.2 that elements that do arguably lexicalise Path *can* incorporate into the verbal cluster); nor can she reasonably base-generate them in P<sub>Loc</sub> or any of the functional heads in the locative extended projection, for that would leave her without an account of the fact that *naar* has no locative variant, and that R-word placement, as in (24b), fails. The R-word facts are particularly complex in this particular empirical domain: while (24b) is indeed ungrammatical, the variant with *naar* does have a grammatical counterpart that, surprisingly, includes the very same element *toe* (an allomorph of *tot*; fn. 13) that we have seen not to be able to support R-word placement itself. Simply put, while *naar* and *toe* are both individually incapable of licensing an R-word, when they team up, as in (27), the result is fine:

13 The morphemes *tot* and *toe* entertain a relationship of suppletive allomorphy, the latter being used whenever this P is used intransitively (as a particle) or (in non-spatial/non-temporal contexts) in combination with an R-word.

- (27)            hij rijdt er naar toe  
                  he drives there<sub>[+R]</sub> to up.to

For Koopman, this complicates matters further: with just a single PathP outside the projection of a locative P as the defining characteristic of directional adpositional phrases, it is difficult to accommodate two intrinsically directional (non-locative) P-elements plus an R-word outside CP(Place).

This is our first indication that Koopman's perspective on the structure of *directional* adpositional phrases is probably too restricted: more space is needed in the directional domain to make the facts fall into place. We will find additional indications to this effect in the discussion of simple postpositional, circumpositional and complex pre- and postpositional PPs in the remainder of this section. Let me proceed, then, by considering Koopman's analysis of simple *postpositional* directional PPs.

### 3.2.2 Postpositional directional PPs

In Koopman's (2000) account of postpositional directional PPs, P raises to Path, thereby lexicalising Path<sup>0</sup> and lifting the latter's need to incorporate, and (a subpart of) the complement of Path raises to SpecPathP.<sup>14</sup> The grammaticality of (21b), a postpositional directional PP in an environment hostile to Path-incorporation, then falls into place. Though incorporation is no longer forced once P has made its way up to Path, it remains an option whenever the head selecting PathP is [-N]. Thus, all versions of (28) are grammatical, with the ones having *in* positioned to the immediate right of *de boom* 'the tree' and between the auxiliary and the lexical verb both being derived on the basis of the structure of *postpositional* directional PPs.

- (28)            ik geloof dat Jan <'in> de boom <'in> is <'in> geklommen  
                  I believe that Jan in the tree in is in climbed

So in postpositional PPs, P, which is taken to originate in the same P-head position that locative prepositions are born in, can apparently reach Path. But we know from the discussion of locative PPs that P never raises to C(Place) or Deg(Place). From this combination of facts we now deduce that Path in simple postpositional PPs takes at most PlaceP as its complement, as in (20c). Since P raises to Path via Place, Koopman predicts that it should be impossible to lexicalise Place with the aid of a place modifier — a prediction which, as she points out, is borne out by the facts in (29b), contrasting minimally with (29a).

- (29)    a.        Jan is (*boven*) in de boom geklommen  
                  Jan is up in the tree climbed  
          b.        Jan is (*\*boven*) de boom (*\*boven*) in geklommen

Degree modifiers (housed by DegP on Koopman's assumptions) are also predicted to be impossible in postpositional directional PPs: after all, with DegP(Place) necessarily absent from the structure of postpositional directional PPs, there is no room for modifiers like *tien meter* 'ten metres' in the tree. But this prediction is *not* confirmed: it is perfectly possible to insert modifiers such as *tien meter* in postpositional directional PPs, on either side of the noun phrase, as shown in (30).

- (30)    a.        [tien meter de boom in] is Jan geklommen  
                  ten metre the tree in is Jan climbed  
          b.        [de boom tien meter in] is Jan geklommen  
                  the tree ten metre in is Jan climbed

14 I will return to the size of the constituent raising to SpecPathP shortly.

We will thus need to return to the question of what to do with degree modifiers like *tien meter* in the syntax of directional PPs. This will be a major concern of section 4 of this paper.

To obtain postpositional word order on the basis of a structure like (20c) (which is Koopman’s proposal for the structure of simple postpositional PPs), with P raising all the way up to Path, obviously there will need to be movement into SpecPathP. Koopman offers us a choice of raised constituents here: Path attracts either its PlaceP complement in its entirety or some projection contained in PlaceP. The case that interests us particularly is that of DP (P’s complement) raising to SpecPathP. This case is interesting because, with DP raising to SpecPathP,<sup>15</sup> DP becomes eligible for subextraction out of PP. And indeed, subextraction of non-R DPs is possible in postpositional directional PPs: the examples in (31a,b) are grammatical with *die*, the non-R relative pronoun.

- (31) a. de boom {✓die/✓waar} Jan ⟨in⟩ is ⟨in⟩ geklommen  
the tree that/where<sub>[+R]</sub> Jan in is in climbed  
b. de heuvel {✓die/°waar} Jan ⟨op⟩ is ⟨op⟩ gewandeld  
the hill that/where<sub>[+R]</sub> Jan on is on walked

The problem, however, is that R-word extraction from unambiguously directional PPs is not always grammatical: it succeeds in (31a), but it fails for many speakers in (31b) (cf. Helmantel 2002:66). For Koopman, who assumes that the complement of Path in directional postpositional PPs is maximally as large as PlaceP, there is every reason to expect R-word extraction from postpositional PPs to be possible: it should be able to proceed via SpecPlaceP (see (32a), based on (20c)), a position we know can be occupied by R-words and used as an escape hatch for onward movement. While (31a) goes along with this expectation, the fact that (31b) is rejected by most speakers does not. Helmantel (2002:66) concludes from (31b) that obligatorily postpositional PPs have Path select PP directly (as in (32b), which is based on (20d)). In this structure, there is no licensing position available for [+R] complements of P, hence DP must be [−R].

- (32) a. [<sub>PathP</sub> Spec [<sub>Path</sub> [<sub>PlaceP</sub> *er*<sub>i</sub> [<sub>PP</sub> P *ec*<sub>i</sub>]]]]  
b. [<sub>PathP</sub> Spec [<sub>Path</sub> [<sub>PP</sub> P DP<sub>[−R]</sub>]]]

The facts in (31) seem to suggest that (20c,d) *both* exist — and the generalisation that emerges is that, in directional contexts, Ps that can *only* be *postpositional* (like *op* in (31b), for most speakers) employ the structure in (32b) (banning R-words) while Ps that can *also* be *prepositional* (like *in* in (31a)) may employ (32a). The structures in (32a,b) will actually give us the beginnings of an understanding of this generalisation. The idea is the following. The presence of Place in the extended projection of P will *allow* P to raise just to Place and no further, and be fully licensed that way as a *preposition*. When there is no further functional structure between Place and Path, Place+P has the *option* of raising on to Path, in which case a *postposition* results. So (32a) gives rise either to a *prepositional* directional PP (with P in Place) or to a *postpositional* PP (with Place+P raising on to Path). The structure in (32b), on the other hand, cannot support a prepositional output: there is no Place–head to license P as a preposition; P *must* therefore raise to Path. So (32b) delivers exclusively *postpositional* outputs, *and* of course makes R-words strictly impossible (because there is no SpecPlaceP, the position licensing R-words). Thus, we derive a direct correlation between P’s grammaticality in a *prepositional* directional PP and the grammaticality of R-words — it is precisely those Ps that are happy to be used prepositionally in directional PPs that can accommodate, in their postpositional incarnation, a position for R-words; directional Ps that *must* (in a given context) be used *postpositionally*, hence must employ (32b), do not support R-words.

15 Apparently without stopping over in SpecPlaceP, the position reserved for R-words. It seems to be precisely in the context of Place (containing the moved P) raising to Path that DP–movement to SpecPathP becomes a possibility — the option of raising DP to SpecPathP must be confined to simple postpositional phrases, and be ruled out for prepositional and circumpositional phrases (where Place does not raise).

This is an interesting result, incorporating Helmantel’s (2002) objection to Koopman’s (2000) proposal into the analysis. But as it stands, it is incomplete: it does not yet shed light on the root causes of speaker variation with respect to (31b), and, concomitantly, directional (10a) (<sup>%</sup>*Jan wandelde op de heuvel* ‘Jan walked onto the hill’) as well. This, then, is something we need to return to.

Let me close the discussion of postpositional directional PPs at this time by noting that, to obtain the beginnings of a result in the domain of (31), we need to revise Koopman’s analysis by allowing the Path head of *postpositional* directional PPs to take something smaller than PlaceP as its complement — specifically, a naked PP. So far, then, we have arrived at the following modified Koopmannian picture of the landscape simple directional PPs:

- (33) *simple directional PPs*
- a. *prepositional*  
 $[_{PathP} Spec [Path [_{CP(Place)} Spec [_{+R}] [C(Place) [_{DegP(Place)} MOD [Deg(Place) [_{PlaceP} Spec [_{+R}] [Place [_{PP} P DP]]]]]]]]]]]$   
 → P-to-Place and no further
  - b. *postpositional (I)*  
 $[_{PathP} Spec [Path [_{PlaceP} Spec [_{+R}] [Place [_{PP} P DP]]]]]$   
 → P-to-Place followed by Place+P-to-Path; PlaceP-to-SpecPathP or DP<sub>[+R]</sub>-to-SpecPathP
  - c. *postpositional (II)*  
 $[_{PathP} Spec [Path [_{PP} P DP]]]$   
 → P-to-Path; DP-to-SpecPathP; no R-words

These three structures correspond to the three of the four logical possibilities in (20) that Koopman’s framework of assumptions allows for in principle (viz., (20a,b,d)). The spectrum will be complete once we see option (20c) (in which Path takes a DegP(Place) complement) at work as well. For this, we will need to turn to a discussion of circumpositional directional PPs, which is the topic of the next subsection.

### 3.2.3 Circumpositional directional PPs

Let us now move on to a discussion of Koopman’s analysis of *circumpositional* directional PPs. The examples of circumpositional PPs given in section 2 are repeated below.

- (3b) *circumpositional, directional*
- |  |  |
|--|--|
| <p>hij loopt om het huis heen<br/>         he walks around the house PRT</p> | <p>hij loopt onder de brug door<br/>         he walks under the bridge through</p> |
|--|--|

Koopman’s (2000) analysis of circumpositional PPs deconstructs the circumposition as a combination of a preposition and a postposition, assuming that the postpositional part of the circumposition (*door, heen*) lexicalises the Path-head that, in prepositional directionals, is empty.<sup>16</sup> Since the postpositional part occupies the highest head in the extended projection of P, it may (but does not *have to*) incorporate into V, according to Koopman. She rightly notes (in fn. 33) that there is speaker and lexical variation here (whence the ‘%’ on the incorporated *door/heen* in (34)), but she does not provide an account of this variation within her analysis.

- (34) a. dat Jan onder de brug <door> is <<sup>%</sup>door> gelopen  
 that Jan under the bridge through is through walked  
 b. dat Jan om het huis <heen> is <<sup>%</sup>heen> gelopen  
 that Jan around the house PRT is PRT walked

<sup>16</sup> Koopman considers the possibility that the postpositional part of circumpositions may itself be base-generated as the head of a PP in Path’s complement, but she does not take a clear stand on the issue. We will return to this point in section 4.

Koopman further assumes that, in circumpositional PPs, Path may take either CP(Place) or DegP(Place) as its complement (cf. (35)), subject to speaker variation.

- (35) a.  $[_{\text{PathP}} \text{Spec} [\text{Path}=\textit{door/heen} [_{\text{CP(Place)}} \text{Spec}_{[+R]} [\text{C(Place)} [_{\text{DegP(Place)}} \text{MOD} [\text{Deg(Place)} [_{\text{PlaceP}} \text{Spec}_{[+R]} [\text{Place} [_{\text{PP}} \text{P DP}]]]]]]]]]]]]]$   
 b.  $[_{\text{PathP}} \text{Spec} [\text{Path}=\textit{door/heen} [_{\text{DegP(Place)}} \text{MOD} [\text{Deg(Place)} [_{\text{PlaceP}} \text{Spec}_{[+R]} [\text{Place} [_{\text{PP}} \text{P DP}]]]]]]]]]]]$

Some speakers allow extraction of the prepositional PP part of circumpositional phrases, as in (36). For these speakers, CP(Place) selection is legitimate in contexts in which Path is overt. But Koopman notes correctly that there is speaker variation here as well — thus, Koster (1987:177) reports a negative judgement on (36), which I share. For speakers who do not accept (36), only DegP(Place) is legitimate in Path’s complement.

- (36) a. % [onder welke brug] is Jan door gelopen?  
 under which bridge is Jan through walked  
 b. % [om welk huis] is Jan heen gelopen?  
 around which house is Jan PRT walked

Either way, it is expected that, since the complement of Path is a large extended projection of P<sub>Loc</sub>, raising P’s DP-complement out of a circumpositional PP without converting it into an R-word should be impossible. This is correct: for an exclusively circumpositional case such as *om ... heen*, only R-word extraction succeeds:

- (37) a. de brug {<sup>?</sup>die/✓waar} Jan onder door is gelopen  
 the bridge that/where<sub>[+R]</sub> Jan under through is walked  
 b. het huis {<sup>\*</sup>dat/✓waar} Jan om heen is gelopen  
 the house that/where<sub>[+R]</sub> Jan around PRT is walked

That (37a) is not impossible with *die* (though somewhat marked compared to its version with *waar*) has to do with the fact that the combination of *onder* and *door* is not exclusively circumpositional: it doubles as a complex postposition. I will turn to this in section 3.2.4.

Staying with R-words for a moment, let me note that Koopman’s account of circumpositional PPs does not predict any speaker variation with respect to the grammaticality of extraction of R-words from out of them, as in (37) — correctly so. But when it comes to the placement of R-words *within* the circumpositional PP, Koopman’s analysis predicts, as Hedde Zeijlstra (p.c.) points out, that for those speakers who reject (36), it should be impossible to put an R-pronoun to the left of a degree modifier like *tien meter* ‘ten metres’ in a circumpositional PP (cf. (38)). This prediction is false, however: for all speakers, including those (such as myself) who reject (36), placement of *er* to the left of *tien meter* is grammatical (in fact, the preferred option, *vis-à-vis* the alternative).

- (38) [<sub>[+R]</sub>(er) tien meter <er> onder door] is Jan gelopen  
 there<sub>[+R]</sub> ten metre there<sub>[+R]</sub> under through is Jan walked

To get the desired surface word order in which the prepositional PP precedes the postpositional element base-generated in Path, Koopman has the complement of Path (i.e., CP(Place) or DegP(Place), depending on the speaker) raise to SpecPathP. As a result of the fact that the prepositional phrase ends up in a left branch position, the prepositional part of circumposition is not incorporable (cf. (39)).

- (39) a. dat Jan <onder> de brug door is < \*onder > gelopen  
 that Jan under the bridge through is under walked  
 b. dat Jan <om> het huis heen is < \*om > gelopen  
 that Jan around the house PRT is around walked

The judgement on (39) is robust and not subject to speaker variation, as expected: regardless of whether Path’s complement is CP(Place) or DegP(Place), it will have to move to SpecPathP in the course of the derivation, as a result of which it becomes opaque. The fact, however, that there is speaker variation in the domain of (34) and (36) is less straightforward — especially because the speaker variation seen in (34) and that seen in (36) are to a significant degree *correlated* (i.e., many speakers who reject (34) with incorporation also reject (36), and *vice versa*). The trick, therefore, will be to find an account for these facts that not only sheds light on the speaker variation *per se* but also manages to relate the two domains of speaker variation in circumpositional PPs to each other.

Koopman’s account is not optimally equipped for that task. We have already seen that her account of (36) is problematic (recall (38)). And Koopman has no account for the variation in (34) at all: (i) all speakers allow  $\emptyset$ Path to incorporate into V (since all speakers of Dutch allow directional prepositional PPs in the relevant contexts), (ii) all speakers allow particles to incorporate into V (the postpositional part of circumpositions is homophonous to a particle), and (iii) all speakers allow incorporation into V of postpositions, as we saw in the discussion in section 3.2.2.

Before leaving the topic of circumpositional PPs, let me briefly address the fact (noted in section 2) that, as (3a) shows, circumpositional PPs are not limited to *directional* interpretations.

- (3a)            *circumpositional, locative*  
                   de schutting staat om het huis heen                    <sup>?</sup>de kabel ligt onder de brug door  
                   the fence stands around the house PRT                    the cable lies under the bridge through

Koopman’s analysis, by treating the postpositional portion of circumpositional PPs as a lexicalisation of Path, seems to have no obvious way of extending to apparently *locative* circumpositional PPs of the type in (3a) — unless these are in fact treated as *directional* PPs. This may not be an unreasonable move for cases like (3a). There *is*, after all, a clear sense of a *trajectory*: though the fence is not *going* anywhere, it does cover the entire trajectory defined by the circumference of the house; and though the cable is not *going* anywhere, it, too, is laid out along a trajectory that runs from one side of the bridge to the other. We may be dealing here with paths after all, therefore — even though there is no sense of *motion* along the path. The same is true, for all intents and purposes, in adnominal cases like (40), and in familiar metaphorical motion cases like (41) and its English translation.

- (40)            het pad om het huis heen                    de weg onder de brug door  
                   the path around the house PRT                    the road under the bridge through
- (41)            de weg loopt om het meer heen  
                   the road walks around the lake PRT  
                   ‘the road runs all around the lake’

As Goldberg & Jackendoff (2004:543) point out, these latter cases are stative (despite the fact that they feature a motion verb), and are ‘indistinguishable from path resultatives in both syntactic structure and argument-structure properties’. It seems to me plausible to assimilate them fully to eventive, directional constructions with a path, and to assume that the particle (*heen, door*) lexicalises the Path-head.

### 3.2.4 Complex postpositional directional PPs

At the end of this inventory of directional adpositional phrases in Dutch, let me say a few words about alternations of the type in (42) (cf. (3b)~(4b)) and (43) (cf. (4b)~(5b)).<sup>17</sup>

17 Koopman (2000) does not discuss complex pre- and postpositions of the types illustrated in (42b) and (43a,b) in any detail.

- (42) a. hij loopt onder de brug door  
           he walks under the bridge through  
       b. hij loopt de brug onderdoor  
           he walks the bridge under-through
- (43) a. de auto rijdt voorbij de molen  
           the car drives before-by ('past') the mill  
       b. de auto rijdt de molen voorbij  
           the car drives the mill before-by ('past')

The example in (42a) is a straightforward case of a directional circumpositional PP, with *door* sitting in Path and the prepositional phrase raising into SpecPathP. For Koopman (2000), the complement of Path in circumpositional PPs is either a full-fledged CP(Place) or a DegP(Place) (cf. (35)) — the former being a possibility only for speakers who allow the prepositional phrase embedded in the circumpositional phrase to undergo pied-piping movement (recall (36)).

Since, as we discovered in section 2.1.2 in the discussion of locative prepositional phrases, P never raises to Deg(Place) let alone to C(Place), a structure in which Path takes a CP(Place) or DegP(Place) complement will not be able to accommodate the complex postpositional case in (42b). To get (42b), we need to raise the preposition *onder* up to *door* in Path — and for that to be possible, the complement of Path should be no larger than PlaceP (recall the discussion of simple postpositional phrases in the section 3.2.2). For the particular case of *onder* 'under', whose prepositional incarnation supports a directional reading and which, concomitantly, allows R-words (cf. *er onder door* 'there<sub>[+R]</sub> under through'), we should allow Path's complement to be as large as PlaceP (cf. (44), which mimics (20c), above). P will raise to Place, as it always does on Koopman's analysis; and Place+P can subsequently raise further up to Path. The PlaceP in the complement of Path will raise to SpecPathP to procure the desired postpositional surface order.

- (44)  $[_{\text{PathP}} \text{Spec} [\text{Path}=\textit{door} [_{\text{PlaceP}} \text{Spec}_{[+R]} [_{\text{Place}} [_{\text{PP}} \text{P}=\textit{onder} \text{DP}]]]]]$

There is no *a priori* reason to believe that the complement of Path=*door* must always be as large as PlaceP: to get the desired complex postpositional output, it should also be possible for Path=*door* to take a simple PP complement, with P raising straight to Path, and P's DP-complement raising to SpecPathP.

- (45)  $[_{\text{PathP}} \text{Spec} [\text{Path}=\textit{door} [_{\text{PP}} \text{P}=\textit{onder} \text{DP}_{[-R]}]]]$

The two structures are equally legitimate (recall (20c,d)); (44) optionally delivers a complex postposition (because P=*onder* does not *have to* raise any further than Place) whereas (45) always does so. Even when they both yield complex postpositional outputs, however, (44) and (45) continue to make different empirical predictions: in (44), an R-word is legitimate whereas in (45) it is not; and in (45), extraction of P's non-R-word complement should be possible while in (44) extraction should only be able to be possible for R-words. Since (44) and (45) are both grammatical structures delivering complex postpositional PPs, it is expected, therefore, that complex postpositions should exhibit significant flexibility with respect to R-words and extraction. This is borne out — both for *onder+door* and for *voor+bij*, the other case of complex postpositions mentioned above, in (43):<sup>18</sup>

- (46) a. de brug {<sup>?</sup>die/✓waar} Jan onder door is gelopen (= (37a))  
           the bridge that/where<sub>[+R]</sub> Jan under through is walked  
       b. de molen {✓die/✓waar} Jan voorbij is gelopen  
           the mill that/where<sub>[+R]</sub> Jan before-by ('past') is walked

18 Why (46a) (= (37a)) is not absolutely perfect with *die* is not clear to me at this time; (46b) is impeccable with both *die* and *waar*.

The case of (43) is rather harder than (42). Though *voor* and *bij* can each independently be used as particles (*hij stelde het haar voor* ‘he posed it her pro-, i.e., he proposed it to her’; *hij legde het conflict bij* ‘he laid the conflict by, i.e., he resolved the conflict’), neither seems to be an obvious candidate for lexicalising Path<sup>0</sup> in (44) or (45): *voor* ‘before’ and *bij* ‘by’, to the extent that they can lexically encode paths to begin with, do not seem to bring in the desired path for the semantics of *voorbij*, which is ‘past, beyond’. Both *voor* and *bij* seem to be places, not paths — something that seems to be confirmed by the fact that *voorbij*, qua complex *preP*, supports a purely locative reading (cf. (5a)). So it seems that we should accommodate both *voor* and *bij* in the *locative* structural domain. Three logical possibilities now present themselves: (i) *voor* spells out P<sub>Loc</sub> and *bij* lexicalises Place, the two adpositional elements coming together via left-adjoining movement of P<sub>Loc</sub>=*voor* to Place=*bij* (in keeping with antisymmetry; Kayne 1994);<sup>19</sup> or (ii) (as Guglielmo Cinque, p.c., suggests) *bij* is itself a P<sub>Loc</sub> taking a (probably nominal) complement containing *voor* (‘at (= *bij*) the PLACE before (= *voor*) x’), with movement once again delivering surface *voorbij*; or (iii) *voor+bij* is treated as a complex P<sub>Loc</sub> — [<sub>p</sub> *voor+bij*]. Let me pursue option (i) first, and see where it can take us. It is depicted in (47). With *voor* raising to *bij* and left-adjoining to the latter, (47) delivers *voorbij*; and with *voorbij* subsequently raising on, as a complex unit, to Path, we derive complex postpositional *voorbij*.

$$(47) \quad [_{\text{PathP}} \text{Spec} [\text{Path}=\emptyset [_{\text{PlaceP}} \text{Spec}_{[R+]} [\text{Place}=\textit{bij} [_{\text{PP}} \text{P}=\textit{voor} \text{DP}]]]]]]$$

This structure makes reasonable sense of the examples in (43): it takes care of the oscillation between pre- and postpositional placement of *voorbij*, and it accommodates the fact that, in its prepositional incarnation, it supports a purely locative interpretation alongside the directional one discussed above. But (47) cannot easily account for the fact that (46b) is grammatical both with *die*[-R] and with *waar*[+R]. The grammaticality of the *waar*-version is of course easy to analyse: PlaceP makes a [+R] specifier position available through which *waar* can transit. The fact that *die* is grammatical as well, however, poses a problem: bypassing the [+R] SpecPlaceP position on the way out of PlaceP would, *ceteris paribus* (but recall fn. 15), threaten to lose us an account of the fact that locative PPs categorically resist extraction of [-R] complements of P. The *die* variant of (46b) can be readily accommodated if we forgo the projection of PlaceP altogether — but then *bij* cannot be the lexicalisation of Place<sup>0</sup>, of course. We could then decide to ‘shift’ the structure ‘one notch down’, so to speak, pursuing option (ii); or we could (perhaps optionally) treat *voor+bij* as a complex P<sub>Loc</sub>, as in (iii). The former will make raising of *voor* to *bij* difficult if *voor* is indeed embedded in a noun phrase with an abstract PLACE head. Finding ways of (dis)proving option (iii) is not easy; I leave this for further research. The question of what to do with the *die* version of (46b) aside, however, it seems reasonable to suppose that (47) represents a possible structure underlying the examples in (43a,b).

So far we have been reasonably successful in applying Koopman’s analysis to complex pre- and postpositional PPs. There is one empirical datum about these PPs, however, that the analysis unfolded so far has severe trouble handling: the fact that they are readily modified by degree modifiers of the type *tien meter*, which Koopman places in the specifier position of a DegP projected outside PlaceP. Consider the examples in (48) and (49):

19 The idea that *bij* is a locative particle lexicalising Place is independently plausible in light of the fact that, in the history of the Germanic languages, *bij* and its cognates have given rise to the prefixal particle *be-* (which we actually see surfacing in one of the English renditions of Dutch *voorbij*, viz. *beyond* = *be-* + *yond*).

This analysis for *voorbij* could probably carry over to *tegenover*, illustrated in (5a), but the issues here are complex. The English rendition of *tegenover* is phrasal: *across from*. Of the two constituent parts of *across from*, the first occurs independently as a particle (*she comes across as honest*); *from*, by contrast, is obligatorily transitive. If either of the elements making up *across from* is to be a locative particle, therefore, the only candidate is *across*. The counterpart of *across* in the Dutch case is *over* (*zij komt eerlijk over* ‘she comes honest over (i.e., across); *zij komt over als (een) eerlijk(e) vrouw* ‘she comes over (i.e., across) as (an) honest (woman)’). So it seems possible to analyse *tegenover* as structurally parallel to *voorbij*, with the second P-element in the string lexicalising Place, and the first being the spell-out of P<sub>Loc</sub> raising up to Place and left-adjoining to the particle base-inserted there. But questions remain about *tegenover* — one of them being the fact that it is unable to be construed directionally (see (5b)). I cannot address the questions surrounding *tegenover* here.

- (48) [(*tien meter*) de brug (<*tien meter*> onder door] is Jan gelopen  
 ten metre the bridge ten metre under through is Jan walked
- (49) a. [*tien meter voorbij* de molen] is de auto gereden  
 ten metre before-by ('past') the mill is the car driven
- b. [(*tien meter*) de molen (<*tien meter*> voorbij] is de auto gereden  
 ten metre the mill ten metre before-by ('past') is the car driven

We had already discovered in section 3.2.3 that Koopman encountered some trouble accounting for the absence of speaker variation concerning the combination of R-words and degree modifiers in circumpositional PPs (recall (38)). What we have just found out is more serious, however, and (not surprisingly) on a par with the problem we ran into in section 3.2.2 in the discussion of simple postpositional PPs: on Koopman's assumptions, there should not be space at all for modifiers of the type *tien meter* 'ten metres' in complex postpositional PPs of the type in (48a) and (49b), whose structures are given in (44)/(45) and (47). It is not difficult to accommodate (49a): prepositional *voorbij* of course allows there to be a DegP(Place) and even a CP(Place) in the complement of Path because *voorbij* does not raise up to Path. But in (48) and (49b), the complex P must make its way up to Path, as in all postpositional PPs, on Koopman's assumptions — and such raising is impossible in the presence of a DegP(Place) or CP(Place): P<sub>Loc</sub> cannot raise to Deg or C(Place).

It is clear, therefore, that the account of degree modification in adpositional phrases must be overhauled: as it stands, Koopman's (2000) analysis makes incorrect predictions with respect to the distribution of these modifiers. Revising Koopman's analysis on this point will be a major concern of mine in section 4.

### 3.2.5 *Directional PPs: Interim summary, problems, and prospects*

At the end of this in-depth discussion of Dutch directional PP types, taking its cue from Koopman (2000) but going beyond it in a number of ways, let me provide a summary of the structures we have encountered:

- (50) *directional PPs — interim summary*
- a. [<sub>Path</sub>P Spec [<sub>CP(Place)</sub> Spec [<sub>+R</sub>] [<sub>C(Place)</sub> [<sub>DegP(Place)</sub> MOD [<sub>Deg(Place)</sub> [<sub>PlaceP</sub> Spec [<sub>+R</sub>] [<sub>Place</sub> [<sub>PP</sub> P DP]]]]]]]]]]
- b. [<sub>Path</sub>P Spec [<sub>DegP(Place)</sub> MOD [<sub>Deg(Place)</sub> [<sub>PlaceP</sub> Spec [<sub>+R</sub>] [<sub>Place</sub> [<sub>PP</sub> P DP]]]]]]]]
- c. [<sub>Path</sub>P Spec [<sub>PlaceP</sub> Spec [<sub>+R</sub>] [<sub>Place</sub> [<sub>PP</sub> P DP]]]]]
- d. [<sub>Path</sub>P Spec [<sub>Path</sub> [<sub>PP</sub> P DP]]]]

All four logically possible complement types manifest themselves. Assuming that Path is a functional element and hence cannot license an argument directly, it is logically impossible for Path to select anything smaller than PP — so (50d) is the smallest possible complementation structure for Path. We have seen it attested in simple and complex postpositional directional PPs from which non-R-words can be extracted. One rung up the ladder of complexity, we find (50c), which is at work in postpositional PPs that allow R-words, and in complex pre/postpositional PPs of the type discussed in section 3.2.4. The structure in (50b) is proposed by Koopman (2000) as one of the options for circumpositional PPs — and there is no reason why it should not be available for simple prepositional directionals as well. For both circumpositional and simple prepositional directional PPs, we finally need to countenance the maximally complex structure in (50a) as well, to allow for extraction (which, on Koopman's assumptions, is restricted to CP(Place) — the counterpart, in the adpositional domain, of CP and DP).

With these structures in place, we have basically covered the entire spectrum of directional adpositional phrases in Dutch.<sup>20</sup> But we have discovered that several problems need our immediate attention:

20 I will not address here a construction which is presumably be a separate case, illustrated in (i); see Helmantel (2002).

- (i) a. van het begin af  
 from the start off
- b. vanaf het begin  
 from-off the start

- In section 3.2.1, it was noted that Koopman’s analysis has trouble accounting for the ungrammaticality of R-words in simple directional PPs that are strictly prepositional (see (24)), and the fact that, when additional directional material is inserted, R-words do become grammatical (see (27)). The trouble here is caused by the fact that on Koopman’s assumptions, PathP is the *only* piece of structure that is exclusively directional.

- (24) a. hij rijdt naar de stad    hij rijdt tot de grens    hij rijdt richting de grens  
          he drives to the city    he drives up.to the border    he drives direction the border  
       b. \*hij rijdt er naar    \*hij rijdt er tot/toe    \*hij rijdt er richting  
          he drives there<sub>[+R]</sub> to    he drives there<sub>[+R]</sub> up.to    hij drives there direction
- (27) hij rijdt er naar toe  
       he drives there<sub>[+R]</sub> to up.to

- In sections 3.2.2 and 3.2.3, we encountered a couple of cases of speaker variation that are not readily accommodated by Koopman’s analysis. What is needed, it seems, is an analysis that can provide an integrated account of the various points of speaker variation, illustrated in (31), (34) and (36).

- (31) a. de boom {✓die/✓waar} Jan ⟨in⟩ is ⟨in⟩ geklommen  
          the tree that/where<sub>[+R]</sub> Jan in is in climbed  
       b. de heuvel {✓die/%waar} Jan ⟨op⟩ is ⟨op⟩ gewandeld  
          the hill that/where<sub>[+R]</sub> Jan on is on walked
- (34) a. dat Jan onder de brug ⟨door⟩ is ⟨%door⟩ gelopen  
          that Jan under the bridge through is through walked  
       b. dat Jan om het huis ⟨heen⟩ is ⟨%heen⟩ gelopen  
          that Jan around the house PRT is PRT walked
- (36) a. %[onder welke brug] is Jan door gelopen?  
          under which bridge is Jan through walked  
       b. %[om welk huis] is Jan heen gelopen?  
          around which house is Jan PRT walked

- In sections 3.2.2 through 3.2.4, we discovered that Koopman’s analysis meets with several problems in the area of degree modification of directional PPs. Her analysis cannot accommodate the facts in (30) and (48), (49b), with (simple or complex) postpositional directional PPs, at all; and it wrongly predicts that the acceptability of (38) with *er* placed to the left of *tien meter* ‘ten metres’ should be subject to speaker variation (since Koopman assumes that only some speakers allow a full CP(Place), with a [+R] specifier outside DegP(Place), in the complement of Path in circumpositional PPs).

- (30) a. [tien meter de boom in] is Jan geklommen  
          ten metre the tree in is Jan climbed  
       b. [de boom tien meter in] is Jan geklommen  
          the tree ten metre in is Jan climbed
- (38) [(er) tien meter ⟨er⟩ onder door] is Jan gelopen  
          there<sub>[+R]</sub> ten metre there<sub>[+R]</sub> under through is Jan walked
- (48) [(tien meter) de brug ⟨tien meter⟩ onder door] is Jan gelopen  
          ten metre the bridge ten metre under through is Jan walked
- (49) a. [tien meter voorbij de molen] is de auto gereden  
          ten metre before-by (‘past’) the mill is the car driven  
       b. [(tien meter) de molen ⟨tien meter⟩ voorbij] is de auto gereden  
          ten metre the mill ten metre before-by (‘past’) is the car driven

All of these problems ultimately point in the direction of a need for additional functional structure in the directional portion of the extended projection of P. In what follows, I will begin by laying out the additional layers of structure that are required. And then I will go on to show that, with those additional layers of structure in place, it can no longer be assumed that both the locative and the directional portions of the structure of PP are part of the extended projection of a *single* lexical P-head. I will therefore argue for an analysis of directional PPs which assumes that these have a functional structure that is built on the lexical projection of P<sub>Dir</sub>. I will argue as well, on the basis of a detailed investigation of the nature of the various functional categories needed in the extended projections of P<sub>Loc</sub> and P<sub>Dir</sub>, that there are systematic parallels between the functional extended projections of adpositions and those of nouns and verbs.

#### 4 PLACE and PATH and their modifiers: Degree modification up close

In the foregoing discussion of the various types of Dutch directional adpositional phrases, we have found reason to believe that the structures in (50), all taken from or based directly on Koopman (2000), are not sufficient — especially in the domain of degree modification, they cannot account for the range of facts we find. Let me zoom in on this problem by highlighting what I think is the key problem: the fact that sentences of the type in (51) are systematically ambiguous. In the pictures below, I have tried to bring out the ambiguity of the example in (51a) graphically; similar pictures can easily be envisaged for the examples in (51b–d), which are likewise ambiguous in ways that will be spelled out in detail for (51a) below.

- (51) a. het vliegtuig vloog tien meter boven het strand (langs)  
 the aircraft flew ten metre above the beach along  
 b. de rivier loopt tien meter achter het huis langs  
 the river runs ten metre behind the house along  
 c. de jongen rende tien meter onder de luifel door  
 the boy ran ten metre under the awning through  
 d. de auto reed tien meter tussen de lantaarnpalen door  
 the car drove ten metre between the lamp-posts through



figure 1

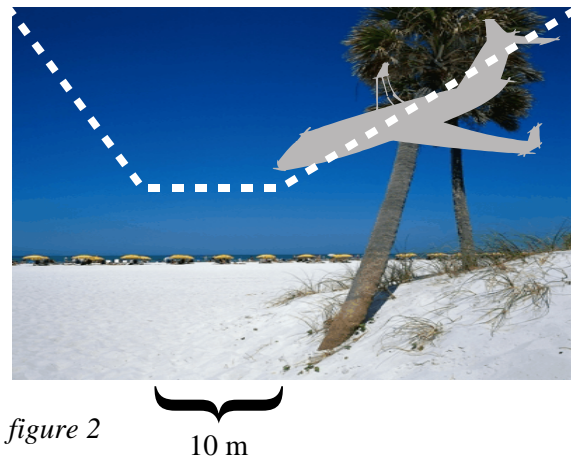


figure 2

One of the readings of (51a) can be paraphrased as in (52a), which says that the aircraft flew ten metres above the beach (PLACE), all along the beach, as shown in figure 1. Alternatively, we can interpret (51a) as in figure 2, paraphrased in (52b): over the beach over a total distance (PATH) of ten metres, at an unspecified height.

- (52) a. het vliegtuig vloog tien meter hoog boven het strand (langs)  
the aircraft flew ten metre high above the beach along  
b. het vliegtuig vloog tien meter lang<sup>21</sup> boven het strand (langs)  
the aircraft flew ten metre long above the beach along

The two senses of *tien meter* are combinable, as in (53), where the first instance of *tien meter* specifies the length of the path and the second the distance from the beach (height).

- (53) a. het vliegtuig vloog tien meter (lang) tien meter (hoog) boven het strand (langs)  
the aircraft flew ten metre long ten metre high above the beach along  
b. het vliegtuig vloog tien meter (hoog) tien meter (lang) boven het strand (langs)  
the aircraft flew ten metre high ten metre long above the beach along

When the two modifiers (*tien meter lang* and *tien meter hoog*) combine, the most natural relative order is the one depicted in (53a). But they can also appear in the opposite order, as in (53b). As (54) shows, only in (53a) does the sequence of modifiers form a constituent with the complex PP; in (53b), *tien meter hoog* is a VP-modifier.<sup>22</sup>

- (54) a. [tien meter lang tien meter hoog boven het strand (langs)] vloog het vliegtuig  
ten metre long ten metre high above the beach along flew the aircraft  
b. \*[tien meter hoog tien meter lang boven het strand (langs)] vloog het vliegtuig  
ten metre high ten metre long above the beach along flew the aircraft

For completeness' sake, (55) shows that the sequence of modifiers in (53a,b) never forms a constituent all by itself.

- (55) a. \*[tien meter lang tien meter hoog] vloog het vliegtuig boven het strand (langs)  
ten metre long ten metre high flew the aircraft above the beach along  
b. \*[tien meter hoog tien meter lang] vloog het vliegtuig boven het strand (langs)  
ten metre high ten metre long flew the aircraft above the beach along

21 The phrase *tien meter lang* is unambiguously a PATH modifier:

- (i) a. het vliegtuig vloog tien meter hoog/lang boven het strand  
the aircraft flew ten metre high/long above the beach  
b. de vlieger hing tien meter hoog/\*lang boven het strand  
the kite hung ten metre high/long above the beach

22 Thanks to Peter Svenonius (p.c.) for urging me to look into the question of whether the PATH modifier in (53a) is a constituent of the complex adpositional phrase or instead a VP-modifier. That *tien meter hoog* 'ten metre high' can indeed be a VP-modifier all by itself, whereas *tien meter lang* 'ten metre long' cannot, is shown by the sharp contrast in (i):

- (i) a. [tien meter hoog vliegen] kun je met dit vliegtuig niet tien meter lang boven het strand (langs)  
ten metre high fly can you with this aircraft not ten metre long above the beach along  
b. \*[tien meter lang vliegen] kun je met dit vliegtuig niet tien meter hoog boven het strand (langs)

Note also the facts in (ii). Since the manner adverb *hard* 'fast' does not denote a PATH, it is impossible for *nog geen tien meter lang* to adjoin to it, which explains the ungrammaticality of (iic); that (iic) is well-formed confirms that the PATH modifier is VP-adjoined.

- (ii) a. hij heeft nog geen tien meter lang hard gerend  
he has yet no ten metre long hard run (i.e., 'he hasn't even been running for ten metres')  
b. [nog geen tien meter lang] heeft hij hard gerend  
c. \*[nog geen tien meter lang hard] heeft hij gerend  
d. [nog geen tien meter lang hard gerend] heeft hij

When we now direct our attention to (51'), featuring the complex pre-/postpositions *bovenlangs*, *achterlangs*, and *onderdoor*,<sup>23</sup> we find that it is no longer possible to combine two tokens of *tien meter*, and that, concomitantly, the sentences in (51') are not ambiguous: only the PATH-related reading of the degree modifier seems to survive when the two Ps amalgamate into a complex pre- or postposition.

- (51') a. %het vliegtuig vloog tien meter (??tien meter) <bovenlangs> het strand <bovenlangs>  
the aircraft flew ten metre ten metre above-along the beach above-along  
b. %de rivier loopt tien meter (\*tien meter) <achterlangs> het huis <achterlangs>  
the river runs ten metre ten metre the house behind-along  
c. de jongen rende tien meter (\*tien meter) <\*onderdoor> de luifel <onderdoor>  
the boy ran ten metre ten metre under the awning through

I personally find this particularly clear in the examples in (51b') and (51c') — due at least in part to the fact that I accept neither version of (51a') without qualification (recall fn. 23). So let me discuss this effect with reference to the b- and c-examples in (51'), for which I believe the effect is clear. In (51b'), *tien meter* can only specify the length of the stretch over which the river flows behind the house (making a sudden turn away from the house beyond this ten-metre stretch), at an unspecified distance behind the house; it cannot quantify the (constant) distance between the house and the river. Similarly, in (51c'), *tien meter* tells us about the length of distance covered by the boy underneath the awning; it does not say anything about the proximity of the boy to the awning.

The formation of a complex pre- or postposition thus seems to affect the modification possibilities of degree modifiers such as *tien meter* 'ten metres'. The fact that only the PATH-related reading of the degree modifier is available when the two Ps amalgamate into a complex postposition is what is expected on the assumption that complex Ps are the result of moving one P up to the other: generating a DegP(Place) in the complement of Path would prohibit movement of P up to Path (cf. Koopman's 2000 generalisation that P never raises to Deg(Place)). The only way to accommodate a PATH modifier is to have it sit in the specifier of DegP(Path), outside PathP — a projection that should therefore be added to the repertoire of functional categories in the adpositional domain.

So far, the evidence we have surveyed reveals that there must be separate insertion sites for PLACE modifiers and PATH modifiers, that both PLACE modifiers and PATH modifiers can form a constituent with the complex PP, and that whenever they do, PATH modifiers must precede PLACE modifiers. The facts in (55) show that the PATH and PLACE modifiers do not adjoin to one another. And (51') indicates that the presence of PLACE modifiers obstructs the formation of complex pre- and postpositions whereas that of PATH modifiers does not. All in all, it is clear that we need *two* positions in the tree for degree modifiers — one outside PlaceP (Koopman's DegP(Place), which is already in place), and one outside PathP (let us call it DegP(Path) for the time being).

There is at least one additional projection needed as well. For notice that degree modifiers can occur on either side of R-words, *both* when they modify PLACE *and* when they are PATH modifiers. Consider (56):

- (56) a. het vliegtuig vloog <er> tien meter lang <er> tien meter hoog <er> boven (langs)  
the aircraft flew there ten metre long there ten metre high there above along  
b. [<er> tien meter lang <er> tien meter hoog <er> boven (langs)] vloog het vliegtuig  
there ten metre long there ten metre high there above along flew the aircraft

23 There is no complex pre- or postpositional version for (51d). Of the other three examples, only (51c') seems to be universally acceptable in the Dutch-speaking world — and there appears to be a broad consensus as well about the fact that *onderdoor* qua complex P can only be used postpositionally. On (51a') and (51b'), judgements vary substantially. I marginally accept both versions of (51a') (but find both inferior to circumpositional (51a)), and reject the complex prepositional version of (51b'), finding its complex postpositional variant perfect; but all versions of (51a',b') seem to be attested.



These projections are organised as in (59a), with the aspectual projection closest to the lexical core, and the CP in outermost position, topping off the extended projection of V. For noun phrases, a similar organisation is readily defended, as depicted in (59b). The NumP recognised by many researchers since at least Ritter (1991) performs the role of aspect in the verb’s extended projection (the *mass/count* distinction, which Num regulates, is parallel to the *delimited/non-delimited* distinction in the verbal domain — see Verkuyl 1993 on the notion of ‘quantised’ reference); to bring out the parallelism between verbal aspect and nominal aspect, I will relabel NumP as Asp<sup>[NUM]</sup>P. Personal deixis, Dx<sup>[PERSON]</sup> (making a distinction between ‘me’, ‘you’, and ‘other’), is the counterpart to temporal deixis (‘present’, ‘past’, and ‘future’) in the verbal domain. And finally, D is the functional equivalent of C; I will label it C<sup>[DEF]</sup> to register the fact that it serves to top off the noun’s extended projection like complementisers do in the verbal domain, and to express the fact that the determiner head brings in definiteness (comparable to force in the verbal domain).

- (59) a. [CP C<sup>[FORCE]</sup> [D<sub>xP</sub> Dx<sup>[TENSE]</sup> [A<sub>wP</sub> Asp<sup>[EVENT]</sup> [VP V ...]]]]  
 b. [CP C<sup>[DEF]</sup> [D<sub>xP</sub> Dx<sup>[PERSON]</sup> [A<sub>spP</sub> Asp<sup>[NUM]</sup> [NP N ...]]]]  
 c. [CP C<sup>[SPACE]</sup> [D<sub>xP</sub> Dx<sup>[SPACE]</sup> [A<sub>spP</sub> Asp<sup>[SPACE]</sup> [PP P ...]]]]

Extending this line of thought into the prepositional domain, as in (59c), we are led to recognise an aspectual projection in the immediate vicinity of the lexical projection of P as well: Asp<sup>[SPACE]</sup>. The head of this aspectual projection will encode the difference between *locative* and *directional* Ps, in a way similar to the distinction made by the verbal aspect head between *stative* and *dynamic* Vs. Thus, Koopman’s ‘PlaceP’ and ‘PathP’ are readily identified as two sides of the same aspectual coin: spatial aspect (Asp<sup>[SPACE]</sup>). Both Asp<sup>[PLACE]</sup> (locative aspect) and Asp<sup>[PATH]</sup> (directional aspect) come in *delimited/bounded* and *non-delimited/unbounded* forms. For Asp<sup>[PATH]</sup>, this is immediately apparent (both *walk into the house* and *walk around the house* involve a PATH-denoting PP, but while the former PATH is bounded, the latter is not (inherently); see esp. Zwarts 2005a). For locative Asp<sup>[PLACE]</sup>, Tortora (2006) has recently presented cogent arguments for a bounded/unbounded distinction as well — noting, among many other things, that the Italian locative PPs *sopra il tavolo* ‘on the table’ and *sopra al tavolo* ‘on to-the table’ differ in that in the former the figure is at a specific point on the table (punctual, bounded location) whereas in the latter it is spread out all over the table (non-punctual, unbounded location). There is ample reason to believe, therefore, that spatial aspect (Asp<sup>[SPACE]</sup>) exists, and comes in two flavours, Asp<sup>[PLACE]</sup> and Asp<sup>[PATH]</sup>. Topping off the extended projection of P is another CP, Koopman’s CP(Place) and, for directionals, the CP(Path) that I introduced in section 4. And in between CP and AspP, once again, is a projection for deixis, Dx<sup>[SPACE]</sup>, distinguishing (analogously to what happens in the verbal and nominal domains) between ‘here’ (‘at the speaker’) and ‘there’ (‘not at the speaker’) in the locative domain and, for directionals, between orientation ‘towards the speaker’ and ‘away from the speaker’.

Dutch and present-day English lexically underdetermine the spatial deixis axis: the distinction between ‘here’ and ‘there’ is not matched by one between orientation ‘towards the speaker’ and ‘away from the speaker’ (cf. archaic English *hither* and *thither*, resp.). German, on the other hand, possesses a sufficiently rich lexicon to be able to make the relevant deictic distinctions in both the locative and the directional realm:

- (60) [PROXIMAL] [DISTAL] (German)  
 a. Asp<sup>[PLACE]</sup> *hier* *da/dort*  
 b. Asp<sup>[PATH]</sup> *her* *hin*

The particles *her* and *hin* (see e.g. Van Riemsdijk & Huybregts 2001) make precisely the kind of deictic distinction we would expect to find in the domain of directional adpositional phrases. In complex adpositional phrases such as (61a,b), these particles co-occur with two adpositional elements, attaching to the postP:

- (61) a. auf das Dach hinauf/über/unter  
 on the-ACC roof DXPRT-on/over/under  
 b. aus dem Haus heraus  
 out.of the-DAT house DXPRT-out.of

I will not have the space in this paper to develop the syntax of (61a,b) and similar such circumpositional PPs in German in any detail.<sup>24</sup> But suffice it to say that the particles *her* and *hin* seen in these examples are the obvious candidates for lexicalising the directional incarnation of the head  $Dx^{[SPACE]}$ .

Hungarian *ide* ‘hither, towards the speaker’ and *oda* ‘thither, away from the speaker’ are similar to German *her* and *hin*. They can perform the same aspectual operator functions that adpositions can perform as well — and in this respect, the directional  $Dx^{[SPACE]}$  particles are entirely on a par with their locative counterparts, *itt* ‘here’ and *ott* ‘there’. Thus, consider the pairs in (62) and (63) (adapted from É. Kiss 2000:192–93):

- (62) a. János alá futott a fának (Hungarian)  
           János to.under-POSS ran the tree-DAT  
       b. János oda futott a fa alá  
           János to.there ran the tree under  
           both: ‘János ran/has run under the tree’
- (63) a. János mellette futott a pataknaK  
           János near-POSS ran the stream-DAT  
       b. János ott futott a patak mellett  
           János there ran the stream near  
           both: ‘János was running near the stream’

Without going into the (considerably more complicated) details of these Hungarian alternations, what we can say is that in the a–sentences, the adpositional element (*alá*, *mellette*) itself performs the aspectual role of verbal prefix by raising into the aspectual domain of the verb, whereas in the b–sentences this aspectual role is played by the deictic particles, *ott* and *oda*, with the adposition staying further down inside the complex PP (=  $CP^{[SPACE]}$ ). The interest of these Hungarian examples in the context of our discussion in this section lies specifically in the fact that the locative and directional deictic particles, *ott* ‘there’ and *oda* ‘thither’, behave exactly on a par — which plausibly suggests that they should be given the same syntactic treatment.

To sum up, we systematically find that there are functional projections for *aspect*, *deixis* and *complementiser* elements in the extended projections of V, N, and also P. Of these various functional categories, the aspectual ones have different feature contents depending on the featural properties of the specific lexical heads in whose extended projection they appear. An  $Asp^{[EVENT]}$  head in the extended projection of a stative verb will be [+stative] (or [–dynamic]), whereas one in the extended projection of an eventive/dynamic verb will be [+dynamic]. An  $Asp^{[NUM]}$  head in the extended projection of a mass noun will be [–plural] (in English), whereas one in the extended projection of a count noun can (but of course does not have to) be [+plural]. By the same token, an  $Asp^{[SPACE]}$  head in the extended projection of a locative adposition will be [–directional], whereas one in the extended projection of a directional adposition will be [+directional]. A certain amount of aspectual ‘coercion’ is possible in all these domains. For nouns and verbs, this is well known: count nouns can ‘become’ mass (via the ‘universal grinder’: *he got an egg* ~ *he got egg on his necktie*), and vice versa (via the ‘universal packager’: *he likes beer* ~ *he would like a beer*); and activities can ‘become’ accomplishments (*he ran* (\**in ten minutes*) ~ *he ran to the store* (*in ten minutes*)). In the adpositional domain we find similar such effects: thus, a basically locative P such as English *in* can ‘become’ directional in certain contexts (*he stood in the room* ~ *he walked in the room*) but not in others (*he stumbled in the room* cannot ‘coerce’ *in* into a directional interpretation; *into* is needed to express directionality here).<sup>25</sup>

Like the *Asp* head, the *Dx* and *C* heads in the extended projections of V, N and P also vary in feature content, but they are different from *Asp* in that the choice of features for *Dx* and *C* is always relatively independent of the features of the lexical head. Thus, in principle every noun phrase that can be definite is

24 In Den Dikken (2003b:section 4), I present a detailed discussion of the structure of German PPs from the perspective of the analysis developed in the text. See also Abraham (this vol.), Noonan (this vol.) for relevant discussion of German locational PPs.

25 The ‘coercion’ of one aspectual class into another is a topic I cannot explore further here.

compatible with both distal and proximal demonstratives (harboured by DxP, either in its head or in its specifier position, depending on language-particular and item-specific factors). Similarly, every verb is in principle compatible with present, past and future tense (though of course there can be restrictions on the use of certain tenses: in English, for instance, the present tense is usually incompatible with episodicity). And likewise, every adpositional element can in principle be combined with either distal or proximal deixis ('at/towards the speaker' or 'not at/away from the speaker'). The same point can presumably be made for the C head as well, but I will not elaborate this here — at least in part because of the fact that it is not entirely clear what C contributes in the adpositional domain. That there is a structural need for a C–projection outside DxP in the adpositional domain is clear: its specifier provides a landing-site and escape hatch for movement. But the (inherent or derived) feature content of the head of this projection is still largely obscure.

Now that we have identified the 'middle functional projection' in the extended projection of P as  $Dx^{[SPACE]}P$ , the counterpart to  $Dx^{[PERSON]}P$  in the noun phrase and  $Dx^{[TENSE]}P$  (a.k.a. TP) in the clause, there is no special relationship any longer between this 'middle functional projection' and the insertion site of degree modifiers such as *ten metres*. It may still be the case that these modifiers appear in the projection of  $Dx^{[SPACE]}$  (Koopman's Deg(Place), and my Deg(Path) in section 4). But the *raison d'être* for  $Dx^{[SPACE]}P$  is no longer the mere need to accommodate degree modifiers. It is entirely plausible to assume that the specifier position of  $Dx^{[SPACE]}P$  can be filled by movement of the complement of P — just like Spec $Dx^{[TENSE]}P$  (a.k.a. SpecTP) is typically filled by movement of an argument of the verb. Temporal adverbial modifiers such as *yesterday* are commonly assumed not to be base-generated in SpecTP, but instead to occupy a position adjoined to TP; and aspectual adverbial modifiers of the type *for/in x amount of time* are likely adjoined to AspP. It is an open question whether the kinds of modifiers Koopman places in her SpecDegP (*ten metres*) are the spatial counterparts of aspectual adverbials or of temporal modifiers instead. I will proceed cautiously by keeping the differences between Koopman's analysis and mine to a minimum, and I will therefore assume degree modifiers such as *ten metres* to be in a position adjoined to  $Dx^{[SPACE]}P$  (the counterpart to Koopman's DegP).

Let me close this section by recapitulating the ways in which I have adapted Koopman's analysis and my own extension thereof offered in section 4 from the point of view of the systematic parallelisms between the verbal, nominal, and adpositional domains. Koopman's PlaceP is now one of two instantiations of a spatial aspectual projection  $Asp^{[SPACE]}P$ , with PathP= $Asp^{[PATH]}P$  being its directional twin. Her DegP(Place) has been relabelled  $Dx^{[PLACE]}P$ , and is now being viewed as the adpositional equivalent of  $Dx^{[PERSON]}P$  in the nominal domain and  $Dx^{[TENSE]}P$  (a.k.a. TP) in the clause; it has received a sibling ( $Dx^{[PATH]}P$ ) for directional phrases, in line with our findings in section 4. And CP(Place) remains in its old form, being doubled by a CP(Path) in the extended projection of directional adpositions. The maximal structures that thus emerge for locative and directional adpositional phrases are given in (64):

- (64) a.  $[_{CP} C^{[PLACE]} [_{DxP} Dx^{[PLACE]} [_{AspP} Asp^{[PLACE]} [_{PP} P_{Loc} \dots]]]]$   
 b.  $[_{CP} C^{[PATH]} [_{DxP} Dx^{[PATH]} [_{AspP} Asp^{[PATH]} [_{PP} P_{Dir} \dots]]]]$

## 5.2 Complement types

With this in place, let us proceed to ask what kinds of complements  $P_{Dir}$  can take — put differently: what can occupy the '...' in (64b)?<sup>26</sup> Here again, I will look beyond adpositional phrases for the contours of an answer.

For lexical verbs that select a(n extended) projection of another verb, I would like to argue that we find the following typology of complement types:<sup>27</sup>

26 For  $P_{Loc}$ , I will assume, without argument, that it always takes a DP-complement. Though PP recursion (one PP being embedded in another PP) is not at all uncommon, *locative* Ps generally do not take adpositional complements. One (facetious) exception that I am aware of is Morris Bishop's *up from out of in under there* (*The New Yorker*, 9/27/1947), where *in* takes an *under*-PP.

27 I am confining the discussion throughout to the class of *lexical* verbs, setting *functional/auxiliary* verbs aside. Arguably, as their name suggests, functional/auxiliary verbs are not representatives of the lexical category V.

- (65) a. V [<sub>VP</sub> V ...]  
 b. \*V [<sub>AspP</sub> Asp [<sub>VP</sub> V ...]]  
 c. V [<sub>DxP</sub> Dx<sup>[TENSE]</sup> [<sub>AspP</sub> Asp [<sub>VP</sub> V ...]]]  
 d. V [<sub>CP</sub> C [<sub>DxP</sub> Dx<sup>[TENSE]</sup> [<sub>AspP</sub> Asp [<sub>VP</sub> V ...]]]]

The structure in (65a), where the higher lexical verb takes a ‘naked’ VP as its complement, is grammatical, and arguably attested in ‘clause union’ or ‘restructuring’ constructions (see Wurmbrand 2001 for extensive discussion). The lower V in this structure obligatorily incorporates into the higher V (producing the familiar ‘clause union’ effects) in order to be licensed: V must be licensed by being included in a T–chain (in the sense of Guéron & Hoekstra 1988, 1993); if V does not have a TP in its own extended projection, it must be included in the T–chain of a higher verb by incorporating into that verb and forming a complex verb with it.

Verbs for which it can be argued (for instance on the basis of their resistance to embedded sentential negation or temporal adverbial modification) that they have T–less complements cannot include perfective viewpoint Asp in their complement. Thus, to the embedded VP of a French *faire*-causative such as *je lui fais lire le livre* ‘I make him read the book’ it is impossible to add perfective aspect: \**je lui fais avoir lu le livre* ‘I make him have read the book’. The presence of perfective Asp in the complement of V demands the presence of a lower Dx<sup>[TENSE]</sup> as well. I take this to be indicative of a local dependency relationship between Asp and Dx.<sup>28</sup> In the structure in (65b), Asp and the embedded V cannot locally satisfy their need to be licensed by Dx<sup>[TENSE]</sup>, nor can they be incorporated into the T–chain headed by the matrix Dx<sup>[TENSE]</sup> by raising up to the higher V and incorporating into it: the lower verb cannot incorporate into the higher verb because there is a functional head (Asp) intervening between the two Vs, and (as Li 1990 shows) movement of a lexical head through a functional head up to a higher lexical head is impossible (‘improper head movement’). Thus, while bearing in mind what was said in fn. 28, I will take the structure in (65b) to be ungrammatical.

By contrast, the structures in (65c) and (65d) are well-formed and well attested in the empirical facts (cf. raising and ECM–infinitives with *to* for (65c), and full-fledged CP complements for (65d)). In both cases, the lower verb can be fully licensed within the complement of the higher verb: there is a T–head present in the higher verb’s complement which can fully license the lower verb. The T–head in (65c) will be anaphoric to the T–head of the higher clause (since it cannot be anchored in its own C); in (65d), the lower clause is fully self-contained.

Now, assuming that the parallels I drew in section 5.1 between the various functional heads in the extended projection of P and the functional heads in the extended projection of V stand up to scrutiny, and assuming further that what I said about the vicissitudes of the structures in (65) carries over, *mutatis mutandis*,<sup>29</sup> to the adpositional domain, we may replicate the pattern in (65) for the case of directional PPs, deriving the typology of complement types for P<sub>Dir</sub> given in (66).

28 This dependency relationship manifests itself in Romance causatives in the form of a ban on *perfective* aspect in the bare-infinitival complement of the causative verb. It does not seem to be the case that *all* values for Asp demand a local Dx<sup>[TENSE]</sup> in this environment, however: Guglielmo Cinque (p.c.) points out that Italian causative *fare* allows the inchoative, repetitive and terminative aspectual verbs *andare* ‘go’, *venire* ‘come’, *tornare* ‘return’ and *finire* ‘finish’ in its complement; and these aspectual verbs exhibit typical non-lexical behaviour in being transparent to clitic climbing (*glielo faccio andare a/finire di dire* ‘I make him go say/stop staying it’), which suggests that they occupy Asp, not V. It is possible, therefore, that the fate of (65b) should be relativised to the specific value of Asp. Hereinafter, I proceed by basing myself on the most restrictive case, barring (65b), to see where this leads us.

29 I will not actually make the requisite ‘mutations’ here. It is certainly not a trivial question how the T–chain based discussion of the vicissitudes of (65a–d) can be made to carry over into non-temporal domains such as the noun phrase or the adpositional phrase. I will assume, however, that such a translation will be possible; and I take it to be the null hypothesis that the patterns we find in the verbal extended projection are replicated in the extended projections of other lexical categories.

Both Zwarts (2006) and Lestrade (2006) find fault with the idea that Asp<sup>[PLACE]</sup>P can be absent from directional PPs, as in the structure in (66a), pointing to a problem of compositionality: one would expect there to be a Place function present in all spatial PPs, and if this Place function translates (as on Jackendoff’s 1990 assumptions) into the presence of a PlaceP, then directional PPs lacking PlaceP are an anomaly. Note, however, that for me Koopman’s (2000) PlaceP is an aspectual projection, Asp<sup>[PLACE]</sup>P making a bounded/unbounded distinction for locative PPs (recall the discussion below (59), above); it does not *encode* the Jackendovian Place function, which I assume to be encoded directly by P<sub>Loc</sub> itself, by way of a lexical distinction between P<sub>Loc</sub> and P<sub>Dir</sub>.

- (66) a.  $P_{Dir} [_{PP} P_{Loc} DP]$   
 b.  $*P_{Dir} [_{AspP} Asp^{[PLACE]} [_{PP} P_{Loc} DP]]$   
 c.  $P_{Dir} [_{DxP} Dx^{[PLACE]} [_{AspP} Asp^{[PLACE]} [_{PP} P_{Loc} DP]]]$   
 d.  $P_{Dir} [_{CP} C^{[PLACE]} [_{DxP} Dx^{[PLACE]} [_{AspP} Asp^{[PLACE]} [_{PP} P_{Loc} DP]]]]]$

In the structure in (66a), the lower P ( $P_{Loc}$ ) obligatorily *incorporates* into the higher P ( $P_{Dir}$ ), forming a complex  $P_{Loc}+P_{Dir}$  (where either P may be null or overt). When the lower P incorporates into the higher P, there can be no  $DxP^{[PLACE]}$  downstairs — which takes care of the fact that in (51'), above, the degree modifier *ten meter* 'ten metres' can only be construed with the PATH, not with the PLACE. In the structures in (66c) and (66d), the presence of functional structure between the lower P and the higher P prevents incorporation, so the two Ps will not amalgamate; when they are both overt, they will be spelled out separately. Thanks to the presence of functional structure between the two Ps, there is space available for degree modifiers of PLACE downstairs — which accounts for the facts in (51)–(54), above.

### 5.3 Beyond $PP_{Dir}$

In adjudicating the structures in (66), I focused on the demands imposed by the higher P–head,  $P_{Dir}$ , on the size of its complement. Let us now consider the options for the functional structure outside the lexical projection of  $P_{Dir}$ . In the structures in (66) as they stand,  $P_{Dir}$  has no extended projection at all. If indeed  $P_{Dir}$  forgoes its own extended projection and ends up having its maximal projection  $PP_{Dir}$  merge directly with V, it stands no chance of getting itself licensed within its own extended projection (since it has none). Hence, if  $PP_{Dir}$  merges directly with V,  $P_{Dir}$  must incorporate into V — and when  $P_{Dir}$  incorporates into V, Baker's (1988) 'Government Transparency Corollary' (GTC)<sup>30</sup> will turn the complement of  $P_{Dir}$  into a derived complement of the complex  $V+P_{Dir}$ .

Suppose, on the other hand, that  $P_{Dir}$  does have an extended projection of its own erected on top of its lexical PP. Then P–incorporation into V will not take place:  $P_{Dir}$  will instead be fully licensed within its extended projection. How large will that extended projection be? The first head we can merge is  $Asp^{[PATH]}$ . Since  $Asp$  is strictly dependent on  $Dx$ , merging  $Asp^{[PATH]}$  will automatically force the merger of  $Dx^{[PATH]}$  as well.  $Dx^{[TENSE]}P$  is suitable as a V–complement (as in ECM and raising constructions; recall (65c)), but  $Dx^{[PATH]}P$  is not. The head of the  $Dx^{[TENSE]}P$  complement of V is incorporable into the higher verb's T–chain, with the higher  $Dx^{[TENSE]}$  head anaphorically binding the lower  $Dx^{[TENSE]}$ . But the head  $Dx^{[PATH]}P$  is not anaphorically bindable by  $Dx^{[TENSE]}$ : though they are each other's counterparts in their respective domains, they are not the same creature, hence they cannot engage in a relationship of anaphoric binding.<sup>31</sup> So once  $P_{Dir}$  elects to erect an extended projection of itself on top of its lexical projection, it must project all the way up to CP.

We thus obtain two options beyond  $PP_{Dir}$ , depicted in (67a,b).

- (67) a.  $V [_{PP} P_{Dir} \dots]$   
 b.  $V [_{CP} C^{[PATH]} [_{DxP} Dx^{[PATH]} [_{AspP} Asp^{[PATH]} [_{PP} P_{Dir} \dots]]]]]$

With this in mind I will take a look at the continuations the structures in (66a) and (66c,d), each time considering both options in (67).

30 The GTC says that a head that has an element incorporated into it governs everything that the incorporated head governed in its original structural position. Incorporation thus extends the government domain of the incorporating head downward. The formulation of the GTC is in terms of government, a now defunct notion. I will not have space here to outline the contours of a minimalist update of the GTC; see Den Dikken (to appear: section 4.3) for brief discussion.

31 See also Svenonius (2004) for the idea that P introduces an event argument that cannot be bound by T (unlike V's E–role).

5.3.1 Beyond (66a)

We know from the discussion in the opening paragraph of section 5.3 that the derivation beyond merger of  $P_{Dir}$  in (66a) proceeds via incorporation of the lower  $P_{Loc}$  into the higher  $P_{Dir}$ . Beyond this point, there are two options, as indicated above. Suppose, first of all, that  $PP_{Dir}$  merges directly with V, as in (67a). Then we obtain the result in (68):

$$(68) \quad (66a)+(67a)= \\ V [_{PP} P_{Dir} [_{PP} P_{Loc} DP]]$$

In the derivation ensuing from this structure,  $P_{Dir}$  will need to incorporate into V. But in addition,  $P_{Loc}$  must also incorporate into  $P_{Dir}$ , for  $P_{Loc}$  had elected to forgo an extended projection of its own. The result of overt-syntactic incorporation of the  $P_{Loc}+P_{Dir}$  complex into V can be realised as a complex verb unless this is blocked by a morphological Well-formedness Condition (cf. Roberts 1997, Den Dikken 2003a) — when  $P_{Loc}=\emptyset$  or  $P_{Dir}=\emptyset$  (so that only one part of the P+P complex is overtly realised), physical incorporation may be audible; but when both  $P_{Loc}$  and  $P_{Dir}$  are overt, a Well-formedness Condition preventing compounds from being spelled out word-internally in incorporation structures ensures that the copy of the  $P_{Loc}+P_{Dir}$  complex that is phonologically realised at PF is the one in  $P_{Dir}$ .

Whether the P-complex is phonologically realised within the verbal cluster or not, with  $P_{Loc}+P_{Dir}$  incorporating into V the Government Transparency Corollary will turn  $P_{Loc}$ 's DP complement into a derived complement of the V-complex. And like all DP-complements of V in Dutch (an 'OV language'), it will therefore have to undergo Object Shift, ending up to the left of V. Thus we expect the DP in directional PPs of this type to behave exactly like an object.<sup>32</sup> That it does indeed is confirmed by the fact that relativisation of the DP with the aid of a non-R relative pronoun is possible in simple and complex postpositional PP constructions: the examples in (31) and (46), repeated below, testify to this.

- (31) a. de boom { $\checkmark$ die/ $\checkmark$ waar} Jan  $\langle$ in $\rangle$  is  $\langle$ in $\rangle$  geklommen  
the tree that/where<sub>[+R]</sub> Jan in is in climbed  
b. de heuvel { $\checkmark$ die/ $\%$ waar} Jan  $\langle$ op $\rangle$  is  $\langle$ op $\rangle$  gewandeld  
the hill that/where<sub>[+R]</sub> Jan on is on walked  
(46) a. de brug { $\text{?}$ die/ $\checkmark$ waar} Jan onder door is gelopen  
the bridge that/where<sub>[+R]</sub> Jan under through is walked  
b. de molen { $\checkmark$ die/ $\checkmark$ waar} Jan voorbij is gelopen  
the mill that/where<sub>[+R]</sub> Jan before-by ('past') is walked

The fact that DP obligatorily undergoes Object Shift into the extended projection of the verb also predicts that, with the  $P_{Loc}+P_{Dir}$  complex incorporating into V, it should be impossible to move the sequence 'DP  $P_{Loc}+P_{Dir}$ ' as a constituent. This seems, at first blush, to be an incorrect prediction: for (69a,b) are perfectly well-formed.

- (69) a. [de boom in] is Jan geklommen  
the tree in is Jan climbed  
b. [de brug onder door] is Jan gelopen  
the bridge under through is Jan walked

32 Nothing else said, we would now expect the P-object to be able to be promoted to subject in a passive construction — that is, we expect 'pseudo-passivisation' to be grammatical in incorporation contexts. This expectation is not borne out. In Den Dikken (2003b:section 5) I address this issue in detail, presenting a perspective on 'pseudo-passivisation' that derives the facts.

But recall that merging  $PP_{Dir}$  directly with  $V$  (which is the scenario that fails to deliver the sequence ‘DP  $P_{Loc}+P_{Dir}$ ’ as a constituent) is only *one* of the ways of continuing the derivation beyond (66a): we also have the option of merging  $PP_{Dir}$  with an extended projection of its own, as in (67b). So suppose that  $PP_{Dir}$  merges with  $Asp^{[PATH]}$ , and then  $AspP$  merges with  $Dx^{[PATH]}$ , and then  $DxP$  merges with  $C^{[PATH]}$ , resulting in (70):

$$(70) \quad (66a)+(67b)= \\ V [_{CP} C^{[PATH]} [_{DxP} Dx^{[PATH]} [_{AspP} Asp^{[PATH]} [_{PP} P_{Dir} [_{PP} P_{Loc} DP]]]]]]$$

In this structure,  $P_{Loc}$  raises to  $P_{Dir}$  as before, because there is no extended projection of  $P_{Loc}$  present in the structure; so the DP-complement of  $P_{Loc}$  comes to behave as though it was the complement of  $P_{Dir}$  (by the GTC), and we expect to get raising of  $P_{Loc}$ ’s object to  $SpecAsp^{[PATH]}P$ . Furthermore, we expect  $P_{Dir}$  to raise to Path but no further (recall Koopman 2000 on the impossibility of P-raising to  $Dx$ , her Deg). This results on the surface in a simple or complex postpositional construction in which the sequence ‘DP  $P_{Loc}+P_{Dir}$ ’ does indeed behave as a constituent (a CP), hence is eligible for topicalisation, as in (69).

### 5.3.2 Beyond (66c,d)

Having taken care of the derivation beyond (66a), let us ask how the derivation of (66c,d) proceeds beyond the projection of  $PP_{Dir}$ . Once again there are two scenarios, which I will consider in turn, starting with (67a), merger of  $PP_{Dir}$  directly with  $V$ .

$$(71) \quad a. \quad (66c)+(67a)= \\ *V [_{PP} P_{Dir} [_{DxP} Dx^{[PLACE]} [_{AspP} Asp^{[PLACE]} [_{PP} P_{Loc} DP]]]] \\ b. \quad (66d)+(67a)= \\ \%V [_{PP} P_{Dir} [_{CP} C^{[PLACE]} [_{DxP} Dx^{[PLACE]} [_{AspP} Asp^{[PLACE]} [_{PP} P_{Loc} DP]]]]]]$$

Since  $P_{Dir}$  forgoes the construction of an extended projection in this scenario, merger of  $V$  must be followed by incorporation of  $P_{Dir}$  into  $V$ , which, via Bakerian ‘government transparency’, turns the complement of the incorporated  $P_{Dir}$  into the complex verb’s derived complement.

This has immediate repercussions for the variety of complements that  $P_{Dir}$  can take. Recall from the discussion at the very outset of this section that  $DxP^{[SPACE]}$  is unsuitable as a  $V$ -complement because  $Dx^{[SPACE]}$  cannot be licensed within its own CP and cannot be anaphorically bound by the matrix  $Dx^{[TENSE]}$  either. That means that the structure in (71a), in which  $P_{Dir}$  takes a  $Dx^{[PLACE]}P$  complement, comes out ill-formed. For (71b), on the other hand, the derivation will converge — but only for those speakers who accept  $C^{[PLACE]}P$  in the (derived) complement of a directional verb, as in (10a), repeated here.

$$(10a) \quad \begin{array}{ll} \text{Jan wandelde op de heuvel} & \% \text{ambiguous: locative — ‘walk (while) on the hill’} \\ \text{Jan walked on the hill} & \% \text{directional — ‘walk onto the hill’} \end{array}$$

For such speakers, this  $C^{[PLACE]}P$ , which becomes a derived complement of  $V$  in (71b) as a result of obligatory incorporation of  $P_{Dir}$  into  $V$  and must therefore be shifted leftward to a position to the left of the verb,<sup>33</sup> will also be able to undergo fronting on its own, leaving  $P_{Dir}$  behind.

33 That locative PPs originating in the complement of  $V$  are illegitimate in postverbal position is shown in (i). The exact nature of the landing-site of leftward-shifted  $C^{[PLACE]}P$  is unclear (cf. Koster’s 1994 and Zwart’s 1994 ‘PredP’), but clearly irrelevant for our purposes here.

- (i) a. dat Jan ⟨op de tafel⟩ zat ⟨\*op de tafel⟩  
 that Jan on the table sat on the table  
 b. dat de kleren ⟨aan de lijn⟩ hangen ⟨\*aan de lijn⟩  
 that the clothes on the line hang on the line

Concretely, then, we predict that speakers who allow  $C^{[PLACE]}P$  in the (derived) complement of a directional verb should allow sentences of the type in (36); and they should likewise allow the postpositional part of circumpositional directional PPs to surface inside the complex verb as a result of incorporation of  $P_{Dir}$ , as in (34). The examples are repeated below.

- (34) a. dat Jan onder de brug ⟨door⟩ is ⟨%door⟩ gelopen  
 that Jan under the bridge through is through walked  
 b. dat Jan om het huis ⟨heen⟩ is ⟨%heen⟩ gelopen  
 that Jan around the house PRT is PRT walked
- (36) a. %[onder welke brug] is Jan door gelopen?  
 under which bridge is Jan through walked  
 b. %[om welk huis] is Jan heen gelopen?  
 around which house is Jan PRT walked

While (36) is subject to speaker variation, as noted in section 3, all speakers readily accept sentences of the type in (72), involving fronting of the entire circumpositional PP.

- (72) a. [onder welke brug door] is Jan gelopen?  
 under which bridge through is Jan walked  
 b. [om welk huis heen] is Jan gelopen?  
 around which house PRT is Jan walked

The ‘direct merger of  $PP_{Dir}$  with V’ scenarios based on (66c,d) (depicted in (71)) fail to produce sentences of the type in (72): there is no CP–size constituent that comprises the entire circumpositional phrase. For sentences of the type in (72), we thus need to resort to scenarios in which  $P_{Dir}$  has an entire extended projection of its own erected on top of its lexical projection, as in (73):

- (73) a. (66c)+(67b)=  
 $V [_{CP} C^{[PATH]} [_{D_{XP}} DX^{[PATH]} [_{AspP} Asp^{[PATH]} [_{PP} P_{Dir} [_{D_{XP}} DX^{[PLACE]} [_{AspP} Asp^{[PLACE]} [_{PP} P_{Loc} DP]]]]]]]]]$   
 b. (66d)+(67b)=  
 $V [_{CP} C^{[PATH]} [_{D_{XP}} DX^{[PATH]} [_{AspP} Asp^{[PATH]} [_{PP} P_{Dir} [_{CP} C^{[PLACE]} [_{D_{XP}} DX^{[PLACE]} [_{AspP} Asp^{[PLACE]} [_{PP} P_{Loc} DP]]]]]]]]]$

On these scenarios,  $P_{Dir}$ ’s complement will raise to  $SpecAsp^{[PATH]}P$  and  $P_{Dir}$  raises to  $Asp^{[PATH]}$  but no further (recall, once again, Koopman 2000 on the ban on P–raising to Dx, her Deg). The full-fledged  $C^{[PATH]}P$ , which is happy to serve as a complement to a directional verb for all speakers, can undergo A’–fronting as a unit, thereby producing (72), as desired.  $C^{[PLACE]}P$  (present in (73b)), on the other hand, *cannot* be moved out of the  $C^{[PATH]}P$ : to do so would involve taking a CP out of a CP, a classic ‘A–over–A’ violation. And in (73a), where  $P_{Dir}$  takes a  $DX^{[PLACE]}P$  complement,<sup>34</sup> subextraction of the locative phrase is impossible as well: in this structure, there is no  $C^{[PLACE]}P$  present at all. We thus expect it to be impossible on both scenarios in (73) to perform subextraction of  $P_{Loc}+DP$  by itself, stranding  $P_{Dir}$ . Concretely, (73a,b) rule out (36). Likewise, since a full  $C^{[PATH]}P$  is projected above  $PP_{Dir}$ , we expect incorporation of  $P_{Dir}$  into V not to take place: (34) cannot be derived from either of the structures in (73).

34  $DX^{[PLACE]}P$  is licit in the complement of  $P_{Dir}$  in (73a) (while it was not in (71a)) because  $DX^{[PLACE]}$  can be anaphorically bound by  $DX^{[PATH]}$  in this structure. It is the absence of  $DX^{[PATH]}$  in (71a) that makes it impossible for  $P_{Dir}$  to select  $DX^{[PLACE]}P$  in this context.

What we have now derived is precisely the correlation between  $P_{Dir}$ -incorporation and subextraction of the prepositional PP out of a circumpositional directional PP that we uncovered in section 3.  $P_{Dir}$ -incorporation and prePP subextraction are both ruled *out* on the scenarios in (73) while they are both ruled *in* on those in (71). And since the structures in (71) are only available for speakers who allow  $C^{[PLACE]}P$  in the complement of a directional verb, we factor speaker variation on (10a) into the equation as well. So we have now derived that the root of the speaker variation that we find on (34) and (36) lies in the question of whether speakers do or do not allow a  $C^{[PLACE]}P$  to be the (derived) complement of a directional verb, as in (10a). This I consider to be an important result. For it is indeed the case that for many speakers there is a correlation between  $P_{Dir}$  incorporability and fronting of  $C^{[PLACE]}P$  in circumpositional PPs. I should hasten to add, though, that I have also found speakers for whom (10a), (34), (36) are *not* correlated. It is likely, then, that additional factors are at play in these domains. Sorting out these additional factors must at this time remain a (very difficult) task for future research.

#### 5.4 Strictly prepositional directional Ps and R-movement

At the end of the previous section, I presented a solution for one of the problems listed in section 3.2.5: the ‘speaker variation correlations’ problem. I had already taken care of the modifier distribution problem in section 4, by developing the structure of directional adpositional phrases beyond Koopman’s single PathP. What remains to be done is to address the first problem we stumbled upon when we were reviewing the Dutch PP data against the background of Koopman’s (2000) analysis: the fact that purely prepositional directional Ps such as *naar* ‘to(wards)’ ban R-words, unless (in the case of *naar*) an additional P-element (*toe*) is added. The key facts for *naar*, which presents the most interesting problem in this domain, are repeated below:

- (24) a. hij rijdt naar de stad  
he drives to the city  
b. \*hij rijdt er naar  
he drives there<sub>[+R]</sub> to
- (26) ik geloof dat Jan ⟨✓naar⟩ het bos ⟨\*naar⟩ is ⟨\*naar⟩ gelopen/gerend  
I believe that Jan to the woods to is to walked/run
- (27) hij rijdt er naar toe  
he drives there<sub>[+R]</sub> to up.to

What we are looking for is an account of *naar* that will (a) restrict it to directional contexts, (b) prevent it from freely incorporating into the verb (recall (26)), and (c) explain the R-word facts. In light of (a), we should base-generate *naar* in the directional portion of the structure — that is, *naar* cannot originate as a  $P_{Loc}$ -head, for otherwise it would be very difficult indeed to account for the fact that it can never be used locatively. But base-generating it as a lexicalisation of  $P_{Dir}$  would seem to leave (26) a mystery:  $P_{Dir}$  can (and in fact must) incorporate into the verbal cluster in syntax whenever  $PP_{Dir}$  is merged directly with the verb.

If *naar* is to be a lexicalisation of  $P_{Dir}$ , we must therefore find a way of barring its immediate projection from merging directly with V. This can in fact be guaranteed if *naar* is assumed to select only  $Dx^{[PLACE]}P$ : after  $P_{Dir}$ -incorporation into V, this  $Dx^{[PLACE]}P$  would illegitimately end up as a derived V-complement (recall the discussion of (71a), above). Though such a categorial selection approach to the ban on incorporation of *naar* is certainly a possible one on which I would not want to slam the door, I would like to suggest an alternative perspective that has the additional advantage of also allowing us to make sense of the R-word facts.

Developing the suggestion I made at the end of section 3.2.1, I would like to propose that *naar* is a lexicalisation of  $Asp^{[PATH]}$ , the aspectual functional head merging with  $PP_{Dir}$  (whose head will be empty in *naar*-type directional PPs). Since we know from the discussion earlier in this section that  $Asp^{[PATH]}P$  cannot merge directly with V, the fact that *naar* cannot incorporate into the verbal cluster follows: in order to

incorporate, it would have to either raise through higher non-lexical heads (which would be ‘improper’; Li 1990), or skip the functional heads that separate it from the verb (which violates the locality conditions on head movement; cf. Travis 1984, Baker 1988).

Base-generating *naar* in  $\text{Asp}^{[\text{PATH}]}$  will also shed light on the R-word facts.  $\text{Asp}^{[\text{PATH}]}$  itself does not make a landing-site available for R-words (unlike  $\text{Asp}^{[\text{PLACE}]}$ , Koopman’s 2000 ‘Place’ head). But we know from the discussion in section 4 that R-words can be placed to the left of PATH modifiers, within the confines of the maximal complex PP — recall (56), repeated here: the leftmost token of *er* in these examples occupies the specifier position of  $\text{C}^{[\text{PATH}]}$ .

- (56) a.     het vliegtuig vloog  $\langle er \rangle$  tien meter lang  $\langle er \rangle$  tien meter hoog  $\langle er \rangle$  boven (langs)  
           the aircraft flew    there ten metre long there ten metre high there above along  
       b.     [ $\langle er \rangle$  tien meter lang  $\langle er \rangle$  tien meter hoog  $\langle er \rangle$  boven (langs)] vloog het vliegtuig  
           there ten metre long there ten metre high there above along flew the aircraft

In order for *naar* to accommodate an R-word to its left, therefore, it will need to accommodate a projection of  $\text{C}^{[\text{PATH}]}$  in its extended projection. Now what I would like to suggest is that *toe* is the spell-out of this C-head: specifically, *toe* is the complementiser that brings in a landing-site for R-words (SpecCP). The account of *naar(+toe)* that emerges from these notes is summarised in (74a):

- (74) a.      $[_{\text{CP}} \text{Spec}_{[\text{+R}]} [_{\text{C}^{[\text{PATH}]}=toe} [_{\text{D}_{\text{XP}}} \text{Dx}^{[\text{PATH}]} [_{\text{AspP}} \text{Asp}^{[\text{PATH}]}=naar [_{\text{P}_{\text{Dir}=\emptyset} \dots]}]]]]]$ <sup>35</sup>

To derive (27), we raise *er* into SpecCP in (74a), and move *naar* up, via  $\text{Dx}^{[\text{PATH}]}$ , to  $\text{C}^{[\text{PATH}]}$ . Left-adjunction of *naar* to *toe* produces *naar+toe*, and with the R-word preceding this complex, we obtain the desired surface output:

- (74) b.      $[_{\text{CP}} er_i [_{\text{C}^{[\text{PATH}]}=naar_j+toe} [_{\text{D}_{\text{XP}}} \text{Dx}^{[\text{PATH}]} [_{\text{AspP}} \text{Asp}^{[\text{PATH}]}=t_j [_{\text{P}_{\text{Dir}=\emptyset} \dots t_i}]]]]]$

The SpecCP position in (74a) is not uniquely available to R-words: *naar* plus its non-R complement can also be moved into this position, producing (75a). Modification of the PATH with *tien (kilo)meter* ‘ten (kilo)metres’ is grammatical both with and without *toe* (see *hij rijdt tien kilometer naar de stad (toe)* ‘he drives ten kilometre to the city (up.to)’); by contrast, stranding a PATH modifier to the right of *toe* is impossible (*\*hij rijdt naar de stad toe tien kilometer*). This suggests that the constituent raised to SpecCP in the course of the derivation of (75a) is  $\text{Dx}^{[\text{PATH}]}P$ , not  $\text{Asp}^{[\text{PATH}]}P$  alone, as depicted in (75b).

- (75) a.     hij rijdt naar de stad toe  
           he drives to the city up.to  
       b.      $[_{\text{CP}} [_{\text{D}_{\text{XP}}} \text{Dx}^{[\text{PATH}]} [_{\text{AspP}} \text{Asp}^{[\text{PATH}]}=naar [_{\text{P}_{\text{Dir}=\emptyset} \dots}]]]]_k [_{\text{C}^{[\text{PATH}]}=toe t_k}]$

This derivation is parallel to that of complementiser-final constructions (in languages such as Japanese) proposed in Kayne (1994), with TP raising into SpecCP.

The question of whether  $\text{DxP}$  can raise on out of CP altogether, into a position in the matrix clause, is a difficult one to answer, both theoretically and empirically. It is not clear at this time what the theoretical restrictions on  $\text{DxP}$  raising are in general. While an antisymmetric analysis of complementiser-final languages suggests that TP can raise to its local SpecCP, long-distance dependencies involving TP and a more distant  $A'$ -position are not readily found (in English, for instance, topicalisation of TP out of an embedded clause is impossible (*\*[Mary is intelligent], everybody thinks that*). For the case of *naar+toe* directionals in Dutch,

35     The exact size of the complement of  $\text{P}_{\text{Dir}}$  is an open question for me at this time. What the analysis needs to ensure is that a non-R DP in the complement of  $\text{P}_{\text{Dir}}$  cannot make it into  $\text{SpecAsp}^{[\text{PATH}]}P$ : such movement would deliver postpositional word order.

the status of subextraction of *naar*+DP with stranding of *toe* remains to be investigated in a systematic way. Note that the analysis sketched above predicts that subextraction of *naar* and its complement should be strictly impossible if that complement is an R-word: in (74b), *naar* and the R-word do not form a constituent. In (75b), by contrast, *naar* and a non-R DP in its complement do form a constituent. I have found sporadic cases of the type ‘*waarnaar* – SUBJECT – *toe* – V’ on the web (searching strings with pronominal subjects, which form a finite set, I got a total of 48 hits, a vanishingly small number compared to the tens of thousands of hits for strings of the type ‘*waar* – SUBJECT PRONOUN – *naar toe* – V’), but I have not done any systematic research on the question of whether these cases are significantly rarer or judged to be much worse than the corresponding cases in which *naar*+DP is moved away from *toe*.

If the derivations of (27) and (75a) given in (74b) and (75b), respectively, are on the right track, we also make a prediction concerning the incorporation of the *toe*-portion of *naar+toe* into the verbal cluster. In (74b), *naar+toe* forms a complex head as a result of left-adjunction of *naar* to *toe*, whereas in (75b), *naar* and *toe* do not form a constituent: *toe* remains on its own in C<sup>[PATH]</sup>. Incorporation of *naar+toe* together into the verbal cluster is expected to be impossible in both cases: in (75b), the two cannot move as a cluster nor can *naar* and *toe* both raise independently of one another (because *naar* is on a left branch); and in (74b), physical incorporation of *naar+toe* with spell-out inside the verbal cluster is impossible for reasons briefly touched upon at the outset of section 5.3.1, above. And plainly, incorporation of *toe* by itself is out of the question in (74b) (such would have to involve ‘excorporation’ of the host, i.e., movement of a segment of a multi-segment category, which is a theoretical anomaly; Kayne 1994).

In (75b), by contrast, incorporation of *toe* into the verbal cluster is arguably legitimate. Whereas incorporation of a lower head into a lexical head via intermediate stopovers in functional head positions along the way violates Li’s (1990) binding condition on head movement (constituting ‘improper movement’), incorporation of the *highest* functional head into the lexical head selecting it is not technically speaking ‘improper’ (A–to–A’–to–A): the initial trace in simple, two-member chains whose foot is in a non-lexical/A’ position and whose head is in a lexical/A position does not qualify as a variable (given that variables are by definition A’–bound), so no binding violation could ensue in chains of this sort (see also Den Dikken 1995:26, fn. 23 for discussion of this point). Indeed, there appear to be several cases of incorporation of a non-lexical/functional head into a lexical head, creating simple, two-member chains. Den Dikken (1995) argues at length that verbal particles are non-lexical elements; yet they can certainly incorporate into verbs. And in the nominal domain, both Uriagereka (1988, 1996) and Baker & Hale (1990) argue for movement of determiners up to V, in cases of determiner or pronoun incorporation/cliticisation.<sup>36</sup> Arguably, therefore, *toe* in (75b) should be able to incorporate into the verbal cluster; but in (74b), *toe*-incorporation is out of the question. The prediction that this makes is that (76a) should be ungrammatical whereas (76b) should converge. This appears to be a reasonable approximation of the facts — though (76b) may well be subject to speaker variation, perhaps in the same way (34) is. This remains to be verified and thought about.

- (76) a. \*dat hij er naar is toe gereden  
           that he there<sub>[+R]</sub> is up.to driven  
       b. ?dat hij naar de stad is toe gereden  
           that he to the city is up.to driven

Though, as the tentative discussion in this section has made amply clear, many questions remain concerning the details of the analysis of *naar*-constructions, the richer structure of directional adpositional phrases emerging from the discussion in this paper gives us a framework within which these questions can begin to be properly contemplated, and hopefully ultimately answered in an explanatorily adequate fashion. The largely descriptive notes made here provide an onset to this, to be pursued further in future work.

36 In more recent work, Uriagereka (1999) explicitly revokes his earlier, purely syntactic analysis of determiner cliticisation in Galician, however, claiming that this cannot be a syntactic phenomenon, but instead must be a late morpho-phonological process.

5.5 P and case: Some notes on German locative and directional adpositional phrases

The Dutch PPs just discussed, *naar* and *tot/toe*, pose problems that are in some ways similar to those presented by German prepositions that are strictly directional yet assign a case that one normally finds assigned by locative adpositions — *zu* ‘to’ (the cognate of Dutch *tot/toe*) and *aus* ‘out.of’ are cases in point.<sup>37</sup> Consider the paradigm in (77):

(77)	a.	er rannte zu dem Laden	(DIR)	a’.	*er rannte zu den Laden	
		he ran to the-DAT store			he ran to the-ACC store	
	b.	er rannte aus dem Laden	(DIR)	b’.	*er rannte aus den Laden	
		he ran out.of the-DAT store			he ran out.of the-ACC store	
	c.	er rannte in dem Laden	(LOC/*DIR)	c’.	er rannte in den Laden	(DIR)
		he ran in the-DAT store			he ran in(to) the-ACC store	

The pair in (77c,c’) is representative of a large set of prepositions in German which encode the difference between their locative and directional uses not in terms of word-order variation (as is common in Dutch, as we have seen) but in terms of the morphological case assigned to their complement: dative case for the locative, and accusative case for the directional version. But *zu* and *aus* do not show this case alternation: they exclusively assign dative case despite the fact that they are inherently directional. Two major questions are posed by these simple observations: (i) how should the case alternation in (77c,c’) (between dative and accusative, for the locative and directional readings, respectively) be structurally encoded (if at all)? and (ii) how can invariant dative case (as in (77a,b)) be reconciled with directionality?<sup>38</sup>

The German adpositional element *auf* has a variety of incarnations. In (78a) it functions as a verbal particle (like English *up*), while in (78b,c) it is a preposition taking a nominal complement. That nominal complement is dative-marked in (78b) and accusative-marked in (78c) — and this case distinction has repercussions for the interpretation of the PP: the dative PP in (78b) is unambiguously locative while that in (78c) is unambiguously directional. The adpositional element *auf* can also combine with a deictic particle (*hin* in (78d); recall section 5.1), in which case it may either surface to the right of its accusative-marked dependent, as in (78d), or to the left or to the right of an accusative PP headed by *auf*, as in (78e). The examples in (78d,e) are like (78c) in featuring accusative case on the noun phrase, and concomitantly they receive a directional reading.

(78)	a.	(er stand) auf			
		he stood up	–		particle
	b.	auf dem Berg			
		on the-DAT mountain	–		locative
	c.	auf den Berg			
		on the-ACC mountain	–		directional
	d.	den Berg hinauf			
		the-ACC mountain HIN-on	–		directional
	e.	⟨hinauf⟩ auf den Berg ⟨hinauf⟩			
		HIN-on on the-ACC mountain HIN-on	–		directional

37 *Zu* is not strictly speaking *strictly* directional: there are a few cases in which *zu* is locative (*zu Hause* ‘at home’, *Humboldt-Universität zu Berlin* ‘Humboldt University at Berlin’), but these are no longer part of a productive pattern in present-day German. By contrast, *zu* as a directional P is entirely productive. *Nach*, the cognate of Dutch *naar*, is not productively used with DPs with determiners (it is predominantly used with place names); verifying the case assigned by *nach* is therefore difficult in light of the fact that it is the determiner that spells out case in German, whereas the head noun is typically uninflected (a few special cases aside).

38 In what follows I will present my take on these questions from the point of view of my theory of PP-structure. See also Zwarts (2005b) and Lestrade (2006) for recent discussions of adpositional case (the latter from a typological point of view).

One thing that the paradigm in (78) tells us is that the adpositional element *auf* by itself does not seem to (have to) possess a Case feature: it can occur without a dependent altogether, as in (78a). Similarly, of course, V does not (have to) possess a Case feature — not even when it is transitive: thus, in Romance *faire*-infinitive causatives (cf. (79)), there is just a single accusative Case feature available, and there is evidence (from so-called ‘long passives’, as in Italian (79c)) that the sole accusative Case available in these constructions is checked in the matrix clause; the infinitival verb thus does not seem to contribute a Case feature of its own in these kinds of context.

- (79) a. Jean fait manger sa soupe à Marie  
 Jean makes eat her soup to Marie  
 ‘Jean makes Marie eat her soup’  
 b. \*Jean fait <Marie> manger sa soupe <Marie>  
 c. la macchina fu fatta riparare a Gianni  
 the car was made repair to Gianni

In *faire*-infinitive constructions, there is but a single functional head providing an accusative structural Case feature — these constructions arguably instantiate a structure of the type in (65a), above, with a ‘bare’ VP in the complement of the matrix causative verb, and no Asp-head downstairs to check accusative Case.

Extrapolating this to PP constructions, let us conclude that P’s ability to assign or check structural Case is dependent on the presence in the structure of an aspectual projection. For locative Ps (which govern dative case), this translates into a link between *structural* dative Case and the functional head Asp<sup>[PLACE]</sup>:

- (80) the DP-complement of P<sub>Loc</sub> checks oblique<sup>39</sup> Case iff Asp<sup>[PLACE]</sup> is present in the structure

Formulating (80) as a biconditional (‘iff’) entails that whenever Asp<sup>[PLACE]</sup>P is projected, there *must* be oblique (in German, dative) Case checking in locative PPs; and, conversely, that whenever Asp<sup>[PLACE]</sup>P is not projected, there *cannot* be oblique Case checking in locative PPs. In light of the biconditional in (80), the fact that German locative PPs in V’s complement will systematically show dative case on P’s DP-complement thus confirms that locative PPs in the complement of a verb systematically feature a projection of Asp<sup>[PLACE]</sup>.

Taking (80) to be a biconditional, as stated, also has interesting consequences for the analysis of *directional* PPs featuring accusative case on P<sub>Loc</sub>’s DP-complement (as in (78c)). If the presence of Asp<sup>[PLACE]</sup>P goes hand in hand with the assignment/checking of dative Case, then the absence of dative case on P’s DP-complement must mean that Asp<sup>[PLACE]</sup>P is not projected. That is, in directional PPs featuring accusative case on the nominal complement, P<sub>Dir</sub> selects PP<sub>Loc</sub> directly. With P<sub>Dir</sub> selecting PP<sub>Loc</sub>, dative Case is uncheckable. Hence, in cases like (78c), P<sub>Loc</sub>=*auf* must be like the particle *auf* in (78a) in radically lacking a Case feature (essentially as in the case of *faire*-infinitive causatives in Romance). Its DP-complement is Case-dependent on the *accusative* Case-checking head Asp<sup>[PATH]</sup> in the extended projection of P<sub>Dir</sub>, hence checks accusative Case. If, on the other hand, P<sub>Dir</sub> selects a full-fledged C<sup>[PLACE]</sup>P (or Dx<sup>[PLACE]</sup>P) as its complement, so that there is an Asp<sup>[PLACE]</sup> present in the extended projection of P<sub>Loc</sub>, the DP must check dative Case against Asp<sup>[PLACE]</sup>, in keeping with locality. This is what is going on in directional PPs featuring *aus* ‘out.of’ and *zu* ‘to’, as illustrated in (77a,b).

We thus end up with the following (partial) typology of German PPs, focused specifically on their case properties.

39 ‘Oblique’ here stands for any case other than nominative and accusative. For German, this amounts to ‘dative’; the few Ps that govern genitive in German (*innerhalb* ‘inside’, *außerhalb* ‘outside’, *infolge* ‘because.of’, *trotz* ‘despite’, *während* ‘during’, *wegen* ‘due.to’) are all non-core Ps (derived from something adjectival, nominal or participial), and will be ignored here. Lestrade (2006:33) points out correctly that my formulation of (80) in Den Dikken (2003b), specifically in terms of *dative* case, would prevent it from carrying over to languages that employ different oblique cases for the complement of P<sub>Loc</sub> (instrumental, locative, genitive).

- (81) a.  $V [_{CP} C^{[PLACE]} [_{DxP} Dx^{[PLACE]} [_{AspP} Asp^{[PLACE]} \langle \underline{DAT} \rangle [_{PP} P_{Loc} DP_{\langle DAT/*ACC \rangle} ]]]]$   
 b.  $V [_{CP} C^{[PATH]} [_{DxP} Dx^{[PATH]} [_{AspP} Asp^{[PATH]} \langle \underline{ACC} \rangle [P_{Dir} [_{PP} P_{Loc} DP_{\langle ACC/*DAT \rangle} ]]]]]]$   
 c.  $V [_{CP} C^{[PATH]} [_{DxP} Dx^{[PATH]} [_{AspP} Asp^{[PATH]} [P_{Dir} [_{DxP} Dx^{[PLACE]} [_{AspP} Asp^{[PLACE]} \langle \underline{DAT} \rangle [_{PP} P_{Loc} DP_{\langle DAT/*ACC \rangle} ]]]]]]]]$   
 d.  $V [_{CP} C^{[PATH]} [_{DxP} Dx^{[PATH]} [_{AspP} Asp^{[PATH]} [P_{Dir} [_{CP} C^{[PLACE]} [_{DxP} Dx^{[PLACE]} [_{AspP} Asp^{[PLACE]} \langle \underline{DAT} \rangle [_{PP} P_{Loc} DP_{\langle DAT/*ACC \rangle} ]]]]]]]]]]$

Locative PPs in the complement of V always project a full-fledged CP, hence systematically feature oblique (in German, dative) case on DP. Locative PPs in the complement of  $P_{Dir}$ , on the other hand, vary in size: they can feature a large extended projection —  $Dx^{[PLACE]}P$  or a full  $C^{[PLACE]}P$  — or they can remain ‘bare’. In the former case, DP will once again show up with dative case (because  $Asp^{[PLACE]}$  is present downstairs, and whenever  $Asp^{[PLACE]}$  is there, there is dative Case to be checked: (80)); in the latter, dative Case is absent, and DP will be Case dependent on an aspectual functional head outside the locative PP.<sup>40</sup>

A few things are worth stressing in the context of this brief discussion of P and case. First, it should be clear from what I said in the preceding paragraphs that I take the case assigned by adpositions to be *structural* Case — that is, I take it to be checked in the domain of an aspectual functional head ( $Asp^{[SPACE]}$ ), just like the structural accusative Case assigned by verbs is checked in the domain of  $v$  (likewise arguably aspectual in nature).

Secondly, I take Case features to be the prerogative of aspectual heads, *not* lexical heads — the latter are not listed in the lexicon as being (inextricably) linked to a Case feature: after all, transitive verbs and adpositions are perfectly grammatical *without* a Case feature. This is perhaps particularly clear in the case of German *auf*, illustrated in (78): when it occurs as a particle (78a) or as a directional P (78c), it does not introduce a Case feature at all. The simplest way of getting these facts is to say that lexical heads never introduce Case features — structural Case is the province of aspectual heads; whether a particular structural Case is available depends wholly on whether the aspectual head responsible for its checking is present in the structure.

A third note that is relevant at this point is that the partial typology in (81) correctly ensures that there is no one-to-one link between directionality and accusative case on DP — after all, (81c,d), in which  $P_{Dir}$  takes an extended projection of  $P_{Loc}$  *including*  $Asp^{[PLACE]}$  as its complement, deliver directional PPs with a *dative* DP-complement, checking its Case feature against  $Asp^{[PLACE]}$ . These kinds of structures are instantiated by directional PPs with case-invariant Ps like *aus* ‘out.of’ and *zu* (cf. (77c)). And it is for these kinds of PPs that it is particularly clear that  $P_{Dir}$  *cannot* take DP-complements all by itself — after all, if it could, then for *aus* and *zu* (which are exclusively directional) one would be at a loss finding a source for structural dative Case: there is no  $Asp^{[PLACE]}$ -head in the extended projection of  $P_{Dir}$ . Directional PPs featuring dative-only Ps such as *aus* and *zu* can be accommodated straightforwardly on the basis of structures of the type in (81c,d), in which  $P_{Dir}$  takes an extended projection of  $P_{Loc}$  as its complement, but not on the basis of a structure in which  $P_{Dir}$  takes a DP-complement. It seems to me plausible to deny quite generally that  $P_{Dir}$  ever takes a DP as its complement; instead, it always selects a(n extended) projection of  $P_{Loc}$ .

Finally, let me reiterate that although it is true that spatial PPs with accusative-marked DPs are directional,<sup>41</sup> it is not the case that directional PPs *must* take an accusative-marked DP — and the system outlined here is right in not making a prediction of this sort.

40 In the structures in (81), this aspectual head will be  $Asp^{[PATH]}$ , which is assumed to check accusative Case. The reader will recall, however, that directional PPs are not necessarily as large as CP: in particular, ‘bare’ directional PPs are legitimate in the complement of V. In a configuration in which neither  $P_{Loc}$  nor  $P_{Dir}$  has an aspectual projection in its extended projection, accusative Case on DP is checked against an aspectual head in the extended projection of V. See Den Dikken (2003b:section 5) for relevant discussion.

41 The qualification ‘spatial’ is important here: *ohne* ‘without’ is an accusative case assigner but it is clearly not directional — it is not a spatial PP to begin with, hence it could not possibly be directional. I have nothing to say about non-spatial PPs in this paper.



It is not entirely clear why verbs cannot take ‘bare’ PP<sub>Loc</sub>-complements. A possibility that comes to mind and which deserves further thought is that this is because all locational/positional verbs that take locative adpositional complements are *copular* verbs (cf. Hoekstra & Mulder 1990). That, coupled with the hypothesis that copular verbs are incapable of incorporating lexical/overt Ps,<sup>43</sup> might then take care of the fact that ‘bare’ PP<sub>Loc</sub> is impossible in the complement of V. Whatever the exact roots of this ban should turn out to be, we may generalise at this point that PP<sub>Loc</sub> must be included either in a full extended projection of its own (as in (84) and (83b,e)), or in a(n extended) projection of P<sub>Dir</sub> (as in (83a,c,d)).

## 6 Concluding remarks

In closing, let me summarise some of the major findings of the discussion in this paper. Starting out from Koopman’s (2000) seminal analysis of the Dutch PP, I first confirmed the central core of Koopman’s structure of locative PPs, then proceeding to develop the structure of directional PPs in full detail, introducing a lexical P<sub>Dir</sub>-head and fleshing out in full detail the extended projection of this P-head. Establishing parallels between the extended projections of verbs and adpositions, I identified aspectual and deixis heads for PLACE and PATH as the equivalents of aspectual and deixis heads in the extended projections of verbs and nouns.

While there are many individual pieces of the analysis presented here that contribute to our understanding of the syntax of PP and to syntactic theory more generally, I would like to conclude by noting that if this analysis stands up to scrutiny, it can be read as an extended plea for the existence of P as a LEXICAL CATEGORY. The fact that spatial Ps can have elaborate extended projections strongly confirms this conclusion. Of course, this is not to say that *all* adpositions are lexical in *all* syntactic contexts. It is very likely, in fact, that Ps like *at* in *look at X* serve as lexicalisations of functional heads (*v* is a possible candidate; see Szekely 2003); and Ps sitting in aspectual (particles) and inflectional (English *to*) positions or, even further up, in functional heads in the A’-domain (such as English *for* in *for-to* infinitives) are of course well attested as well. But if what I have argued in this paper holds water, it would be wrong to take the ‘prepositions as probes’ program initiated by Kayne (2001) to its logical conclusion and abolish the lexical category of P altogether. Truly lexical adpositions do exist — the spatial adpositions are a case in point.<sup>44</sup>

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43 The Benvenistian adage that ‘*have* = *be* + P’ (cf. Kayne 1993, Den Dikken 1995) does not refute the text claim as long as the incorporated P is always *null* in this case. See Den Dikken (1995) for discussion of the idea that Dative Shift, which is argued to be an integral part of the derivation of *have*-sentences, is always set in motion by the need to license a *null* dative P.

44 One property of Ps (including spatial Ps) that is often raised as an argument for treating them as functional rather than lexical elements is the fact that they belong to a *closed class*. I do not believe this constitutes a valid basis on which to categorise Ps as non-lexical. The range of conceptually and physically possible spatial relationships is simply too small to facilitate the kind of infinity found with quintessential open-class categories such as N. One cannot ‘make up’ a new spatial relationship at will; in ‘making up’ spatial P-elements, one is tied to the limitations of three-dimensional space. Languages certainly vary *within* the range of physically possible spatial relationships when it comes to their lexicalisations of such relationships; but they cannot go *beyond* that range.

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