

Word order and case alternations with PPs as reflexes of complex predicate formation

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1 Introduction

In **Dutch**, some locative adpositions (Ps) can appear in **pre- or postposition** (first discussed in van Riemsdijk 1978):

- The prepositional order correlates with a locative reading (1-a).
- The postpositional order correlates with a directional reading (1-b).

- (1) a. Brigit duwde de kar **in** de sloot.
Brigit pushed the cart in the ditch
'Brigit pushed the cart inside the ditch.' *locative / *directional*
- b. Brigit duwde de kar de sloot **in**.
Brigit pushed the cart the ditch in
'Brigit pushed the cart into the ditch.' **locative / directional*

- *Common assumption*: The prepositional order is basic.
⇒ The postpositional order is derived from the prepositional base order.
- *Previous accounts* (e.g. Koopman 2000; Helmantel 2002; den Dikken 2003, to appear; van Riemsdijk and Huybregts 2007; Caha to appear):
 - The postpositional order is derived PP-internally.
 - There is additional structure inside the PP that is associated with directionality.

- (2) $[_{PP_{dir}} [_{DP} \text{de sloot}]_j [_{P'_{dir}} \text{in}_i - \emptyset [_{PP_{loc}} t_i t_j]]]$

Similarly, **German** differentiates between locative and directional (goal) readings of PPs headed by locative Ps by **case** on the complement of P:²

- Locative readings correlate with dative case (DAT) (3-a).
- Directional readings correlate with accusative case (ACC) (3-b).

- (3) a. Christina schob den Wagen im Graben.
Christina pushed the.ACC cart in.the.DAT ditch
'Christina pushed the cart inside / *into the ditch.'
- b. Christina schob den Wagen in den Graben.
Christina pushed the.ACC cart in.the.ACC ditch
'Christina pushed the cart *inside / into the ditch.'

- *Previous accounts* (e.g. den Dikken 2003; van Riemsdijk 2007; Caha to appear):
 - ACC is linked to a functional layer inside the PP associated with a directional meaning.

¹This paper has benefited greatly from discussions with Boban Arsenijević and is partially based on Arsenijević and Gehrke (to appear).

²A similar case marking pattern is found in other Indo-European languages, like Latin, Ancient Greek or most Slavic languages. Data from Russian and Czech are discussed in detail in Gehrke (2008); for data from and an analysis for Czech see Caha (2006), and for an extension of the current account to Serbo-Croatian, see Arsenijević and Gehrke (to appear).

Goal of the paper:

- With the locative Ps, there is no additional PP-internal structure associated with a path. The locative Ps that display word order or case alternations bear a locative meaning only. The meaning of goal or directionality results from the particular embedding of the PP within the VP.
- ACC is a reflex of complex predicate formation and thus a result of the PP-external syntax. In particular, ACC is a structural case ‘assigned’ by the verb rather than by the P.
- Similarly, the postpositional order is derived PP-externally. The P moves into a position after its DP complement to enable complex predicate formation with the verb.

Structure of the talk:

- Data generalisations
- Background assumptions about event structure
- The proposal
- Remaining issues

2 The data

Informal background assumptions (cf. Jackendoff 1983; Fong 1997; Kracht 2002; Zwarts 2005b):

- A particular P is (lexically) locative or directional.
- Locative Ps, like *in*, *on*, *under*, *behind*, are associated with Place meanings.
- Directional Ps, like *to*, *from*, *out of*, *into*, *through*, *along*, are associated with Path meanings such as GOAL, SOURCE, ROUTE.
- Directional PPs are built on top of locative PPs; syntactically, they involve (at least) one projection associated with a directional meaning (PP_{dir}), which embeds another projection associated with the specification of a locative space, with respect to which the path expressed by the directional PP extends (PP_{loc}).³

2.1 Not all Dutch Ps are like *in* in (1)⁴

- Locative Ps that are like *in*: *op*, ‘on’ (4)

- (4) a. Willemijn danste **op** het podium.
Willemijn danced on the stage
‘Willemijn danced on the stage.’ *locative / *directional*
- b. Willemijn danste het podium **op**.
Willemijn danced the stage on
‘Willemijn danced onto the stage.’ **locative / directional*

- The prepositional order is associated with a locative meaning; the PP refers to a location.
- The postpositional order is associated with a directional-goal meaning; the PP refers to the final location of a goal-oriented motion event.

³For a general discussion and motivation of this more complex structure for directional PPs, see Asbury, Gehrke, van Riemsdijk, and Zwarts (2008) and references cited therein.

⁴I am abstracting away from the so-called R-pronouns (van Riemsdijk 1978), which always appear to the left of Ps, even when the P itself can normally not appear in postposition, since I believe that the source for this order is a different one (see Koopman 2000; Helmantel 2002; den Dikken to appear, for discussion).

- Locative Ps that are not like *in*: *aan* ‘at’, *achter* ‘behind’, *onder* ‘under’, *naast* ‘next to’, *voor* ‘in front of’, *over* ‘above, over’; these can only appear in preposition, a directional reading cannot be derived (5)

- (5) a. Willemijn danste **onder** het podium.
 Willemijn danced under the stage
 ‘Willemijn danced under the stage.’ *locative / *directional*
- b. *Willemijn danste het podium **onder**.
 Willemijn danced the stage under

- Directional Ps that alternate: source P *uit* ‘out’; route Ps *langs* ‘past, along’, *door* ‘through’ (6)

- (6) a. Maaïke liep **door** het bos.
 Maaïke walked through the forest
 (i) ‘Maaïke walked around in the forest.’ *unbounded*
 (ii) ‘Maaïke walked all the way through the forest.’ *bounded*
- b. Maaïke liep het bos **door**.
 Maaïke walked the forest through
 ‘Maaïke walked all the way through the forest.’ *only bounded*

- With directional Ps the word order alternation does not correlate with a difference between a locative and a directional reading.
- *rather*: a particular meaning aspect of the directional reading is involved; under the postpositional order the path referred to is necessarily bounded (in the sense of Zwarts 2005b).

- Directional source P *van* ‘from’ and directional goal P *naar* ‘to’ only appear in preposition:

- (7) a. Henriëtte liep **naar** de winkel.
 Henriëtte walked to the store
 ‘Henriëtte walked to the store.’
- b. *Henriëtte liep de winkel **naar**.
 Henriëtte walked the store to

NB: In combination with the ‘right’ verb (verbs that express some kind of directed motion, see section 3), prepositional phrases headed by any locative P (alternating or non-alternating) are ambiguous between a locative and a directional reading:

- (8) a. Rick sprong **in** het meer.
 Rick jumped in the lake
 ‘Rick jumped inside/into the lake.’ *locative / directional*
- b. Gert Jan schopte de bal **op** de tafel.
 Gert Jan kicked the ball on the table
 ‘Gert Jan kicked the ball on(to) the table.’ *locative / directional*

Postpositional phrases can also occur with these verbs (only directional reading):

- (9) a. Rick sprong het meer **in**.
 Rick jumped the lake in
 ‘Rick jumped into the lake.’ **locative / directional*
- b. Gert Jan schopte de bal de tafel **op**.
 Gert Jan kicked the ball the table on
 ‘Gert Jan kicked the ball onto the table.’ **locative / directional*

Interim summary⁵

Dutch prepositions correlate with either locative or directional meanings.

Dutch postpositions involve directional readings, associated with final locations or bounded paths.

2.2 German is not totally like Dutch

Revised generalisations on the data discussed in Zwarts (2005a):⁶

locative + DAT:	<i>bei</i> ‘near, at’; <i>an</i> ‘at, on’, <i>auf</i> ‘on’, <i>hinter</i> ‘behind’, <i>in</i> ‘in’, <i>neben</i> ‘next to’, <i>über</i> ‘over, above’, <i>unter</i> ‘under’, <i>vor</i> ‘in front of’, <i>zwischen</i> ‘between’
locative + ACC:	—
directional + DAT:	source: <i>aus</i> ‘out’, <i>von</i> ‘from’ genuine goal: <i>nach</i> ‘to’, <i>zu</i> ‘to’
directional + ACC:	genuine route: <i>durch</i> ‘through’, <i>um</i> ‘around’ derived route: <i>über</i> ‘over, above’ derived goal: <i>an</i> , <i>auf</i> , <i>hinter</i> , <i>in</i> , <i>neben</i> , <i>unter</i> , <i>vor</i> , <i>zwischen</i>

Table 1: Case marking with spatial Ps in German

- DAT: with all locative readings (10-a) and Ps that are unambiguously source (10-b) or goal (10-c).

- (10) a. Ich wohne in einer Wohnung / neben einer Schule / über einer Kneipe.
I live in a.DAT apartment / next-to a.DAT school / above a.DAT pub
‘I live in an apartment / next to a school / above a pub.’
- b. Das Auto fährt aus der Garage.
the car drives out the.DAT garage
‘The car is driving out of the garage.’
- c. Ich fahre mit dem Rad zur Arbeit.
I drive with the bike to-the.DAT work
‘I go to work by bike.’

These are Ps that express their basic meaning, and directionality is not derived.

- ACC: with route Ps (11-a) and directional meanings derived with locative Ps (11-b).

- (11) a. Ich lief durch den Wald.
I ran through the.ACC forest
‘I ran through the forest.’
- b. Das Auto fährt in die Garage.
the car drives in the.ACC garage
‘The car is driving into the garage.’

⁵More complex combinations in Dutch involving complex prepositions, complex postpositions and circumpositions, are discussed in van Riemsdijk (1978); Koopman (2000); Helmantel (2002); Broekhuis (2002); den Dikken (to appear), among others; for similar data from closely related languages see also van Riemsdijk (1990); Noonan (2005) for German, or Biberauer and Folli (2004) for Afrikaans. I cannot discuss these combinations in detail here, but I assume that the overall generalisations and the current proposal can be carried over to these more complex cases.

⁶These are *revised* generalisations on the data discussed in Zwarts (2005a) for reasons I cannot go into here, but see Gehrke (2008). With Zwarts, I only discuss spatial Ps that appear with either DAT or ACC. German also has Ps that appear with genitive case, which are mostly derived from other categories such as nouns and adjectives. Many of these Ps do not express a spatial meaning. Furthermore, genitive case in German is slowly being replaced by DAT and there are instances where Ps can appear with both cases due to this reduction of the case system.

- Most locative Ps can appear with ACC to derive a directional reading; exception: *bei* ‘near, at’⁷
- Most of the derived meanings involve a goal reading; exception: *über* ‘above, over, across’, which gets a (bounded) route interpretation.⁸
- Across the languages that have this kind of case alternation in the PP domain:
 - Only locative Ps appear with both cases; acc correlates with a directional reading.
 - There are locative Ps that only appear with an oblique case and thus do not display this case alternation. At the one end of the spectrum, we have a language like Latin in which only *in* ‘in’ and *sub* ‘on’ participate in the alternation, and all other locative Ps appear with oblique cases only. At the other end there is German, in which almost all locative Ps (except for *bei* ‘at’) can appear with both cases. Languages like Russian, Czech or Serbo-Croatian seem to be somewhere in the middle.
 - There are Ps that are lexically directional (expressing a goal, source or route meaning) and never alternate. The generalisation here is that goal and source Ps appear with DAT and/or genitive case, whereas route Ps appear with ACC.

This paper: account for the emergence of ACC with Ps that participate in the case alternation.

2.3 Similarities and differences between Dutch and German

- *similar* (or somewhat different, depending on the analysis of Dutch *uit* ‘out’, see section 6):
 - Dutch goal and source Ps never appear in postposition
 - German goal and source Ps never appear with ACC
- *partially different:*
 - Dutch: Only a few locative Ps allow the word order alternation.
 - German: Almost all locative Ps allow the case alternation (12), (13).

(12) *German under and behind with DATIVE DPs: locative only*

- Das Boot trieb unter der Brücke.
the boat floated under the.DAT bridge
‘The boat floated under the bridge.’
- Luisa kickte den Ball unter dem Tisch.
Luisa kicked the ball under the.DAT bridge
‘Luisa was under the table and kicked the ball.’

⁷A potential exception is also *gegenüber* ‘opposite, across’. Note however that there is a directional-goal P *gegen* + ACC with the meaning ‘against, towards’, which could be seen as the directional counterpart of *gegenüber*:

Er stellte den Stuhl gegen die Wand.
he put the chair against the.ACC wall

‘He put the chair against the wall.’

Since it is not clear whether this is a derived or a genuine goal, I did not include *gegen* or *gegenüber* in table 1.

⁸German *über* ‘above, over, across’ does not display the same systematicity that other locative Ps show with case alternations. With DAT it expresses the locative reading ‘above’, but unlike with *unter* ‘under’ and other locative Ps, ACC with *über* does not derive a goal but a route reading ‘across, over’. Furthermore, *über* with an additional postpositional route element can be used both with DAT and ACC for many speakers, although DAT is in general preferred. Note in this context that Dutch *over* ‘over’ can appear in postposition, in contrast to *onder* ‘under’ or *achter* ‘behind’, and that in this position it also gets a route but not a goal reading.

- c. Klaus schwamm hinter dem Boot.
Klaus swam behind the.DAT boat
'Klaus swam behind the boat.'
- d. Christina sprang hinter die Tür.
Christina jumped behind the.DAT door
'Christina jumped behind the door.'

(13) *German under and behind with ACCUSATIVE DPs: directional-goal only*

- a. Das Boot trieb unter die Brücke.
the boat floated under the.ACC bridge
'The boat floated (to a location) under the bridge.'
- b. Luisa kickte den Ball unter den Tisch.
Luisa kicked the ball under the.ACC table
'Luisa kicked the ball (to a location) under the table.'
- c. Klaus schwamm hinter das Boot.
Klaus swam behind the.ACC boat
'Klaus swam (to a location) behind the boat.'
- d. Christina sprang hinter die Tür.
Christina jumped behind the.ACC door
'Christina jumped (to a location) behind the door.'

- *different*: (see also section 3)

- Dutch: To obtain a directional reading with locative Ps, the postpositional order is obligatory with manner of motion verbs, but optional with directed motion verbs.
- German: ACC is obligatory to obtain a directed motion reading for locative Ps with all verb types, DAT is unambiguously locative (12), (13).

- *different*:

- Dutch: Most route Ps allow word order variation.
- German: Most route Ps appear with ACC only.

- *the same*: With locative Ps the directional reading involves the same kind of derived goal reading (final location of a motion event), except for *über/over* 'above, over'.

- *the same*: Postpositions and ACC arise when a PP is embedded as a secondary resultative predicate over an internal argument of the verb, which undergoes a change of location.

3 Prerequisites for the postpositional order and for ACC

The same prerequisites that are necessary for postpositions in Dutch to be possible, also hold for the emergence of ACC with case-alternating Ps in German.

(14) **Generalisation 1:**

- a. *Dutch*: If P is of the alternating kind, whether or not it appears in postposition depends directly on the relation that the denotation of the verb establishes with the PP (15).
- b. *German*: ACC is assigned irrespective of the P, but directly depending on the relation that the denotation of the verb establishes with the locative component of the PP (16).

(15) a. Mirjam zat {in} de boom {*in}.
Mirjam sat in the tree in
'Mirjam sat in the tree.'

prepositional and locative only

- b. Mirjam wandelde {in} het bos {in}.
 Mirjam walked in the forest in
 ‘Mirjam walked in / into the forest.’ *prep.: locative, postp.: directional*
- c. Mirjam klom {in} de boom {in}.
 Mirjam climbed in the tree in
 ‘Mirjam climbed in / into the tree.’ *prep.: ambiguous, postp.: directional*

- (16) a. Der Stift war unter/über/vor/hinter/in/auf/neben der / *die Kiste.
 the.NOM pen was under/above/in_front_of/behind/in/on/next_to the.DAT / *the.ACC box
 ‘The pen was under/above/in front of/behind/in/on/next to the box.’
- b. Er warf den Stift unter/über/vor/hinter/in/auf/neben die Kiste.
 he.NOM threw the pen under/above/in_front_of/behind/in/on/next_to the.ACC box
 ‘He threw the pen under/above/in front of/behind/in/on/next to the box.’
- c. Er warf den Stift unter/über/vor/hinter/in/auf/neben der Kiste.
 he.NOM threw the pen under/above/in_front_of/behind/in/on/next_to the.DAT box
 ‘He threw the pen (and this happened) under/above/in front of/behind/in/on/next to the box.’

- Stative verbs like *be, remain, stay; sit, stand, lie* (15-a), (16-a):
 - cannot refer to a change of state or location and do not involve entities undergoing a change of state or location (UNDERGOERS, in the sense of Valin and LaPolla 1997) (see also Ramchand 2008, for a similar use of this notion)
 - only allow locative Ps in preposition (Dutch) / with DAT (German)
 - directional Ps are not possible
 - the PP can only modify the entire event but cannot specify a goal of the event
- Verbs that can refer to a movement or a change of state or location can combine with locative Ps in either pre- or postposition (Dutch) or with either case (German).
 - In Dutch, these fall into (at least) two different groups (Gehrke 2008):⁹
 - * manner of motion verbs (*swim, dance, walk*) as in (16-b):
 - locative P in preposition: only locative reading available; locative P in postposition: only directional reading available
 - directional P in preposition: ambiguous between unbounded and bounded reading; directional P in postposition: only bounded reading
 - * semelfactives (*jump*), change of state or location verbs (*throw, fall*), verbs that have some meaning component of directed motion (*klimmen* ‘climb’ in (16-c)):
 - A prepositional phrase with a locative P is ambiguous between a locative and a directional reading; with the postposition only a directional reading is available.
 - In German, both types of verbs behave alike:
 - * A DAT-PP refers to the location of the entire event (12), (17).
 - * An ACC-PP refers to the final location of the undergoer (13), (18).

⁹Similar findings from English and Norwegian are discussed in Thomas (2001, 2003) and Tungseth (2006), respectively.

- (17) a. Diana schwamm im See.
Diana swam in-the.DAT lake
'Diana swam in the lake.'
- b. Silke sprang im See.
Silke jumped in-the.DAT lake
'Silke jumped (and this happened) in(side) the lake.'
- c. Sören tanzte auf der Bühne.
Sören danced on the.DAT stage
'Sören danced on the stage.'
- d. Maren kickte den Ball auf dem Tisch.
Maren kicked the ball on the.DAT table
'Maren kicked the ball (and this happened) on the table.'
- (18) a. Diana schwamm in den See.
Diana swam in the.ACC lake
'Diana swam into the lake.'
- b. Silke sprang in den See.
Silke jumped in the.ACC lake
'Silke jumped into the lake.'
- c. Sören tanzte auf die Bühne.
Sören danced on the.ACC stage
'Sören danced onto the stage.'
- d. Maren kickte den Ball auf den Tisch.
Maren kicked the ball on the.ACC table
'Maren kicked the ball onto the table.'

⇒ For any VP, a postpositional phrase in Dutch may be obligatory or optional to express a directional meaning, or banned, depending on the verb projecting the VP.

⇒ acc in German PPs may be obligatory or banned, depending on the verb projecting the VP.

(19) **Generalisation 2:**

- a. *Dutch:* A P can appear in postposition only if the eventuality also involves an entity undergoing a change of location (20).
- b. *German:* ACC can be assigned to a nominal expression appearing as the complement of a P only if the eventuality also involves an entity undergoing a change (21).

- (20) a. Brigit duwde de kar de sloot in.
Brigit pushed the cart the ditch in
'Brigit pushed the cart into the ditch.'
- b. Maaïke liep het bos door.
Maaïke walked the forest through
'Maaïke walked all the way through the forest.'

- (21) a. Die Wäsche hing an der/*die Leine.
the.NOM laundry hung on the.DAT/*the.ACC line
'The laundry was hanging on the line.'
- b. Sie hängte die Wäsche an die Leine.
she.NOM hung(CAUS) the.ACC laundry on the.ACC line
'She hung up the laundry.'

Sometimes the undergoer is not explicitly expressed:

- (22) a. Sie schoss in die Wand.
she.NOM shot in the.ACC wall
'She shot into the wall.'
- b. Er richtete die Kamera auf die Hauptdarstellerin.
he.NOM pointed the.ACC camera on the.ACC main_actress
'He pointed the camera at the main actress.'

Nevertheless it is possible to clearly identify an entity undergoing a change:

- In (22-a), we find a verb of ballistic motion with an implicit undergoer of the change of location, namely a bullet or bullets, that have been shot.
- (22-b) involves an implicit undergoer of pointing, similar to the verbs of ballistic motion (in this case an imagined line from the camera to the actress).

(23) **Generalisation 3:**

- a. *Dutch:* When a P appears in postposition, the PP always denotes a secondary resultative predicate of the undergoer of a change of location.
- b. *German:* PPs taking a nominal complement in acc always denote a secondary resultative predicate of the undergoer of a change of location.

The particular PPs express a resultative predicate, the subject of which is the undergoer of change: the result of the change is that the undergoer bears a certain property. The undergoer is the internal argument of the main verb.

- The undergoer is/becomes the verb's internal argument with transitive verbs (24-a).
- The undergoer behaves like an internal argument of the verb that surfaces in subject position with intransitive verbs (24-b).

- (24) a. Roberta hat den Laster auf den Hügel gefahren.
Roberta.NOM has the.ACC truck.ACC on the.ACC hill driven
'Roberta drove a/the truck onto a/the hill.'
- b. Das Boot trieb an die andere Seite des Sees.
the.NOM boat drifted at the.ACC other side the.GEN lake.GEN
'The boat drifted to the other side of the lake.'

A potential problem: Postpositional phrases also occur with intransitive motion verbs of the type in (4-b) or (24-b), in which the verb in isolation does not seem to have an internal argument / undergoer. *But:* The DP surfacing in subject position in these cases behaves like an internal argument, like an undergoer of a change of location (see appendix in section 8 for evidence from Dutch).

(25) **Questions raised by the data**

- What is the relation established with the verb, and how is it established?
- Where does the meaning of path with locative Ps come from in the absence of PP-internal structure associated with a path?
- What is responsible for the difference between verb types?
- Why is the same case assigned to the undergoer and to the complement of PP in German?
- Why are only locative meanings involved in German?
- What is the status and the nature of the oblique cases with the German Ps?
- Why are Dutch and German alike in some respects but different in others?

4 Background assumptions about event structure

Particular verbs identify particular event types (states, activities, accomplishments, achievements, in the sense of Vendler 1957, but rephrased in event structure terms).

More complex event types can be built on top of simpler event types (Dowty 1979; Rothstein 2004, among many others).

(26) *Event templates (Rothstein 2004, 35)*

States	$\lambda e.P(e)$	e.g. <i>John knew the answer.</i>
Activities	$\lambda e.(DO(P))(e)$	e.g. <i>Mary ran in the park.</i>
Achievements	$\lambda e.(BECOME(P))(e)$	e.g. <i>They arrived at the station.</i>

(27) *Accomplishment template (Rothstein 2004, 108)*

$$\lambda y \lambda e. \exists e_1, e_2 [e =^S (e_1 \sqcup e_2) \\ \wedge \text{ACTIVITY}_{\langle x \rangle}(e_1) \wedge \text{Ag}(e_1) = x \wedge \text{Th}(e_1) = y \\ \wedge \text{BECOME}_{\langle y \rangle}(e_2) \wedge \text{Arg}(e_2) = \text{Th}(e_1) \\ \wedge \text{INCR}(e_1, e_2, C(e_2))]$$

(28) *Incremental relations (Rothstein 2004, 108)*

Let e_1 be an activity, e_2 be a BECOME event, and $C(e_2)$ be an incremental chain defined on e_2 .

$\text{INCR}(e_1, e_2, C(e_2))$ (e_1 is incrementally related to e_2 with respect to the chain $C(e_2)$) iff:

there is a contextually available one-one function μ from $C(e_2)$ onto $\text{PART}(e_1)$ (the set of parts of e_1) such that:

for every $e \in C(e_2)$: $\tau(e) = \tau(\mu(e))$.¹⁰

(29) *Examples of lexical and syntactically derived accomplishments*

- a. She ate the cake.
- b. He put the book on the shelf.
- c. We hammered the metal flat.

(30) *Summing operation for resultative predication (Rothstein 2004, 76)*

$$\text{RSUM}[\alpha, \beta] = \lambda y \lambda e. \exists e_1, \exists e_2 [e =^S [e_1 \sqcup e_2] \wedge \alpha(e_1, y) \wedge \beta(e_2, y) \wedge \text{TPCONNECT}(Cul(e_1), e_2, y)]$$

(31) *Time-participant connectedness (Rothstein 2004, 71)*

$\text{TPCONNECT}(e_1, e_2, y)$ iff:

- (i) $\tau(e_1) = \tau(e_2)$ (i.e. the run time of e_1 is the same as the run time of e_2);
- (ii) e_1 and e_2 share a participant y .

5 The proposal

5.1 The general picture (Gehrke 2008)

PPs can combine with verbs in two different ways (similar: Hoekstra 1999; Folli 2002; Neeleman and van de Koot 2002; Beck 2005; Tungseth 2006; Arsenijević 2006; Ramchand 2008, among others):

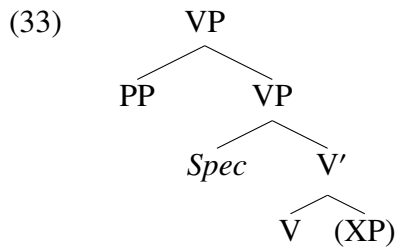
- as event modifiers (VP adjuncts) (33)

(32) *PPs as event modifiers (Beck 2005, 34)*

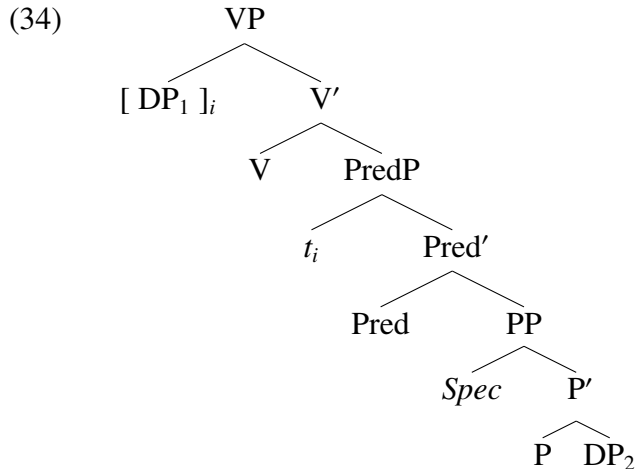
- a. Sally slept in the park.
 $\lambda e. \text{sleep}_e(S) \ \& \ \text{in}_e(\text{the_park})(S)$

¹⁰Following Krifka (1992, 1998), τ in (28) is the temporal trace function that maps an event to its ‘run time’. The set of culminations of the parts of e_1 is defined as the upper bounds of the event parts of e_1 which are the values of the μ function: $Cul_{C(e_2)}(e_1) = \text{ub}(\{\mu(e) : e \in C(e_2)\})$

- b. Sally walked in the park.
 $\lambda e.walk_e(S) \ \& \ in_e(the_park)(S)$
- c. [in the park] $\rightarrow \lambda x.\lambda e.in_e(the_park)(x)$



- as secondary resultative predicates (complements to V) (34) (*answers question (25-a)*)



PredP: mediates between the main verbal predicate and a secondary (non-verbal) resultative predicate like the PP to glue them together into one complex predicate.¹¹

- DP_1 in the specifier of PredP is the Figure (the external argument) of the PP, i.e. the entity that is located with respect to the Ground (DP_2).
- At the same time, DP_1 behaves like an internal argument of the verb (the main predicate): it moves from Spec, PredP to Spec, VP to become the undergoer of the complex predicate.
 - With (active) transitive verbs, DP_1 is the object:

(35) John pushed **the cart** to the store.

- With intransitive verbs, DP_1 will eventually become the subject of the sentence:

(36) **John** walked to the store.

The configuration in (34) is semantically associated with an accomplishment structure.

- Under particular conditions an activity can combine with an AP or PP, which are integrated VP-internally so that they are interpreted as secondary resultative predicates over a shared argument.
- A crucial ingredient of (both lexical as well as syntactically created) accomplishments: the two events associated with the activity and with BECOME are connected by an incremental relation.

(37) **The Incrementality Hypothesis** (Gehrke 2008): Accomplishment structures crucially rely on incremental structures.¹²

¹¹PredP as a concept was introduced by Bowers (1993), from which my proposal deviates somewhat.

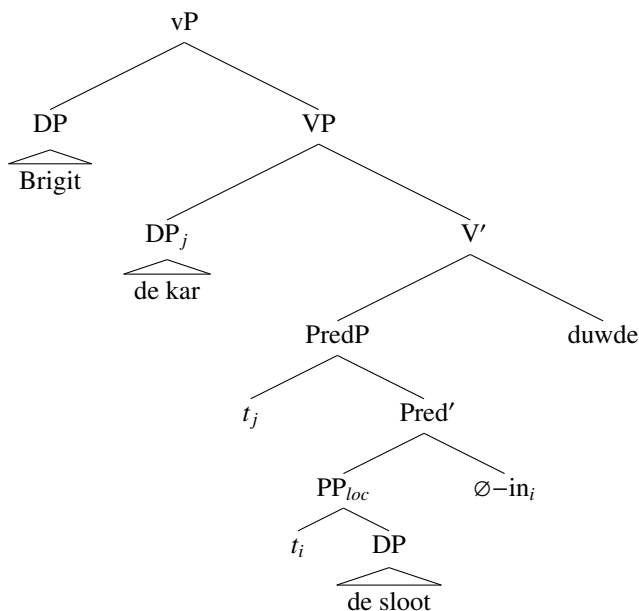
¹²Similarly, Hay, Kennedy, and Levin (1999); Zwarts (2006), among others, argue that scalar structures underly the

- PredP needs to be licensed semantically: a BECOME event can be built just in case an incremental structure is provided.
 - An incremental structure can be associated with verbs:
 - * lexical accomplishment verbs (e.g. *put, throw*)
 - * motion verbs that seem to refer to some directed motion have a path element, but are not necessarily accomplishments (e.g. *klimmen* ‘climb’ in Dutch)
 - An incremental structure can be associated with the secondary predicate:
 - * PPs headed by directional Ps like *to, through* are interpreted as paths (Zwarts 2005b), linearly ordered sets of locations, and thus identify an incremental structure.
 - * Particular adjectives have scalar structure (e.g. Kennedy 1999, among others).
 - Additional language specific mechanisms can glue the two predicates into one, e.g. moving Ps into postposition in Dutch, accusative case marking in German PPs, verbal prefixes and particles in languages like Russian or Hungarian (see Gehrke 2008; Hegedűs in preparation, for more details).¹³

5.2 Application to the data¹⁴

5.2.1 Dutch

- (38) ... dat Brigit de kar de sloot in duwde.
 that Brigit the cart the ditch in pushed
 ‘... that Brigit pushed the cart into the ditch.’



notion of telicity. What is different under the current proposal, which builds on Rothstein (2004), though, is that a scalar structure, incrementality, is tied to a model of event structure. In particular, it is tied to an accomplishment structure, which is not necessarily the same as telicity under the current account.

¹³Svenonius (2009) independently presents a related idea about the division of labour between verbs and PPs in structuring a directed motion event, also relying on a structure with PredP, though his proposal differs from the current one in several details.

¹⁴I follow the common assumption that Dutch and German are specifier-initial but head-final in the VP and TP, and I also postulate that PredP is head-final.

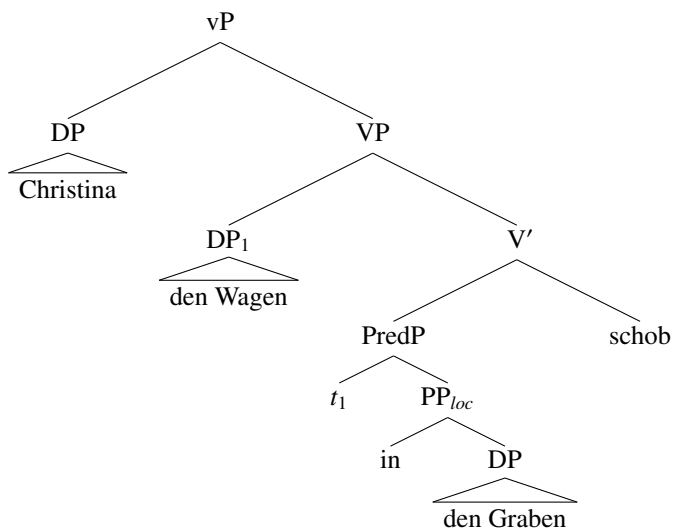
Answer to question (25-c):

- *With manner of motion verbs:*
 - The incorporation of a locative P acting as a secondary resultative predicate into Pred is obligatory because the verb itself is an activity verb and does not license PredP by itself, since it is not associated with an incremental structure.
An incremental structure is imposed on the verb’s denotation; since we are dealing with a motion verb, the plausible incremental structure is a path, thus the derived path reading. **(answers question (25-b))**
 - The incorporation of a directional P acting as a secondary resultative predicate into Pred is optional because the PP itself is already associated with an incremental structure.
The ambiguity of prepositional *door*-phrases, for example, is due to different attachment sites of these PPs: as VP adjuncts (unbounded reading) or as secondary resultative predicates (bounded reading).
- *With lexical accomplishments/achievements:* The incorporation is optional, since PredP is already licensed by the verb, and the PP itself can merely modify the final location.
- *With directed motion verbs* (e.g. *klimmen* ‘climb’): These verbs are lexically specified for an incremental path so that they can license PredP when they combine with locative PPs that specify the upper bound of the path.

Incorporation of P into Pred can be followed by further optional incorporation of Pred into the verb.

5.2.2 German

- (39) ... dass Christina den Wagen in den Graben schob.
 that Christina the.ACC cart in the.ACC ditch pushed
 ‘... that Christina pushed the cart into the ditch.’

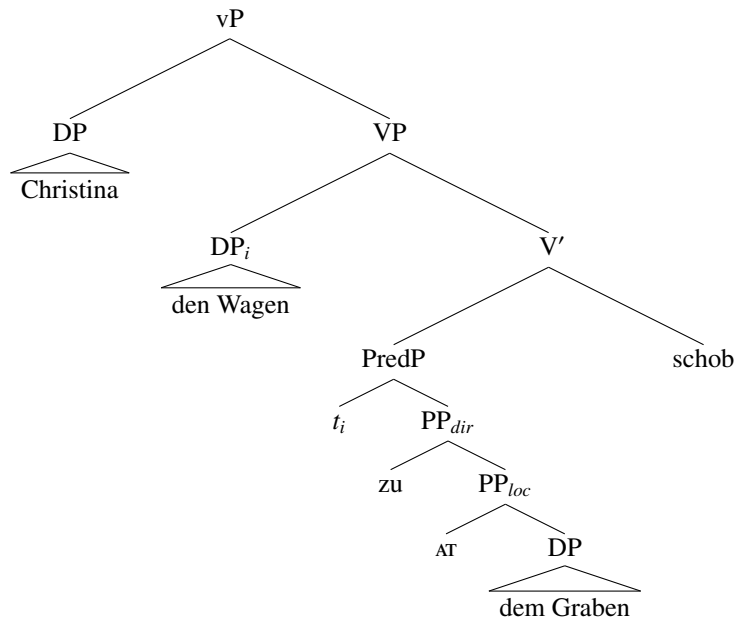


- The locative component is lexicalised by the P, but the case stays the one assigned by the verb. The verb assigns acc to all the local arguments; since the subject of Pred has moved, and is assigned accusative too, the local domain is extended to PredP. **(answers question (25-d))**
- Locative meanings satisfy the minimality requirements for case assignment, but a further projection on top of the locative one, such as a PP_{dir}, intervenes for case assignment.¹⁵ **(answers question (25-e))**

¹⁵Arsenijević and Gehrke (to appear) provide additional examples from Serbo-Croatian involving intervening DegPs.

ACC only emerges in case a bare PP_{loc} or a bare PP_{dir} (headed by a route P) is embedded under $PredP$; with genuine goals and sources: a PP_{dir} intervenes between $Pred$ and PP_{loc} :¹⁶

- (40) ... dass Christina den Wagen zum Graben schob.
 that Christina the.ACC cart to-the.DAT ditch pushed
 ‘... that Christina pushed the cart to the ditch.’



- DAT is always there in the structure, inherent to the respective locative meanings, but it gets overwritten if structural ACC is assigned.¹⁷ (*answers question (25-f)*)
 - If a PP_{loc} is directly embedded under $Pred$, lexical case is not assigned but gets overridden by ACC.
 - $Pred$ selects a complement and blocks its case assigning properties, it overrules the oblique case appearing inside such PPs otherwise and instead the entire complement of V is assigned ACC.

Some independent motivation for this approach to case:¹⁸

We arguably need some sort of case overwriting mechanism also with unaccusative and passive structures, in which the internal argument DP receives nominative case, which overwrites ACC commonly found on internal arguments.

NB: A locative PP interpreted as the final location of this internal argument still bears ACC.

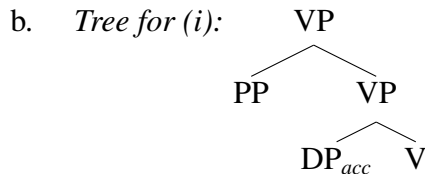
¹⁶Some P-determiner combinations in German, such as *zu* ‘to’ + *dem* ‘the.DAT’ can be contracted, which results in *zum* in (40). This suggests that Caha’s (to appear) proposal is on the right track and *zu* simultaneously spells out directional to and locative AT, unlike what is represented in (40).

¹⁷In Gehrke (2008), the data from German is compared with data from Czech and Russian, where we find case alternations within PPs in the same environments. There, I follow van Riemsdijk (2007) in assuming that dative case in German represents the default case in oblique domains. However, this is problematic for several reasons, the most important one being that such an account cannot be carried over to case alternations in Slavic languages, in which different oblique cases are used for the locative meanings, and there seems to be a semantic correlation between the particular oblique case, instrumental or locative, and whether or not the P under discussion is projective or not (in the sense of Zwarts and Winter 2000) (for more problems with the default case account see Caha to appear).

¹⁸For a more detailed argumentation for the need of something like a case overwriting mechanism see Caha (2006, to appear), who embeds it into a much more comprehensive theory of case.

Prediction of the account: PPs that do not function as secondary resultative predicates over the internal argument cannot appear with ACC / postpositional order:

- (41) a. Er warf den Stift in der Kiste.
 he.NOM threw the pen.ACC in the.DAT box
 (i) ‘He threw the pen (while standing) inside the box.’ (VP-modifier)
 (ii) ‘He threw the pen (that has the property to normally be) inside the box.’
 (DP-internal modifier)



5.3 Dutch vs. German (answers question (25-g))

The similarities between Dutch and German are due to the PP-external rather than -internal syntax.

The precise reflexes that the embedding of the PP within the VP has on the PP itself (movement vs. case assignment) are quite different in both languages, and this accounts for the difference between these two languages.

⇒ Caha’s (to appear) ‘Case-Movement Correlation of German and Dutch’ is only indirect.

- similar with locative Ps (see section 6 for speculations why less Ps alternate in Dutch)
- similar with Ps that do not alternate: directional sources and goals
 possible explanation: intervening PathP, which licenses the path reading PP-internally - movement in postposition is blocked (but see section 6) / ACC assignment is blocked
- different with route Ps: are mostly ACC in German, can alternate in Dutch
 not clear why, but note: German route paths with ACC are of the bounded type.
- the same with manner of motion verbs: Postposition/ACC is obligatory to bring about a directional reading.
 Otherwise complex predicate formation would not be possible because incrementality is lexically provided neither by the verb nor by the P.
- different with directed motion verbs: Postpositions are optional, ACC is obligatory to bring about directional reading.
 - Dutch: PredP is already licensed by the verb itself, the P does not have to move in postposition to license the structure.
 - German: The undergoer DP still moves into Spec, VP, which widens the case assignment domain for ACC.

6 Some remaining issues

- Why do not all Ps alternate?
 - *van* ‘from’ (similar: German *von*)
 - * For some reason, *van*-phrases are defective and can only be adjuncts, just like their counterparts in English and German (Gehrke 2008) (42).

- (42) a. ??Ik liep van een brug.
 I walked from a bridge.

- b. ??I walked from a bridge.
- c. Ik sprong van een brug.
I jumped from a bridge
'I jumped from a bridge.'

– *naar* 'to'

- * implausible: There is no necessity to move, since the PP provides an incremental structure and Pred is licensed anyways; why do other directional Ps like *door* alternate then?
- * possible: Given its semantics (Jackendoff 1983; Zwarts 2005b, among others), *naar* is decomposable into $\text{TO}+\text{AT}$ and thus spells out a larger chunk of the structure, as suggested for German *zu* 'to' in Caha (to appear); this blocks its movement into Pred

– *aan* 'at' (similar: German *bei*)

- * possible: The movement option is blocked by the availability of directional *naar* 'to' (however one wants to model lexical blocking, see Caha to appear, for an account)
- * *NB*: *at* is the only locative P in German that does not alternate for case (also not in Russian, Czech Gehrke 2008)

– All other locative Ps in Dutch

- * implausible: movement is blocked because of morphological complexity (e.g. *achter* 'behind, *onder* 'under'); this will not work for all: e.g. strictly prepositional *voor* 'in front of' vs. alternating *door* 'through' are morphologically the same
- * These are projective Ps (in the sense of Zwarts and Winter 2000, and others), as opposed to non-projectives ones like *in, on*.
- * possible: an additional projection inside these locative PPs, associated with the projective axis (e.g. AxPart, along the lines of Svenonius 2008), blocks the movement into postposition. *But then*: Why can they alternate for case in German?

• Is Dutch *uit* 'out' directional or locative?

- The English counterpart *out (of)* is generally treated as a directional (source) P, associated with a path (e.g. Zwarts 2005b).
- However, den Dikken (2008) treats it as a locative P, then rather like English *outside*.
- It behaves like the counterpart of locative *in* in many respects (not in German, though):

- (43)
- a. *?Hij liep uit de kamer.
he walked out the room
(intended meaning: 'He walked out of the room.')
 - b. Hij liep de kamer uit.
he walked the room out
'He walked out of the room.'
 - c. Hij viel uit de boom.
he fell out the tree
'He fell out of the tree.'

- If it is directional, we would have to assume that it must be ‘defective’ like *van* as discussed above; but then we would not expect it to be able to appear in postposition.
- implausible: it cannot be locative because there is the locative P *buiten* ‘outside’; there is also a locative P *binnen* ‘inside’.
- Some punctual change of state verbs like *verdwijnen* ‘disappear’, *verwijderen* ‘remove’ only allow prepositional *uit*:

- (44) a. Hij verdween uit de kamer.
 he disappeared out the room
 ‘He disappeared from the room.’
 b. *Hij verdween de kamer uit.
 he disappeared the room out

Is there a connection with the prefix *ver-*?

- What is the proper account of the oblique cases in German and how is the story for German embedded in an overall theory of case (as it is done in, for instance, Caha to appear)?
- Why do all routes in German combine with ACC if they are directional and thus should involve a more complex structure, if we follow the general line in the literature? The account proposed in van Riemsdijk (2007) seems to have a better handle on this issue.
- Postpositional phrases in Dutch and acc in German PPs also appear without verbs, so where is the complex predicate formation, and how are these examples analysable without internal path structure?

- (45) a. De gevangenis in met die crimineel! (*Helmantel 2002, 35*)
 the prison in with that criminal
 ‘In(to) the prison with that criminal!’
 b. de weg de berg op
 the path the hill on
 ‘the path up the hill’

- (46) a. Ins / *Im Gefängnis mit dem Verbrecher!
 in_the.ACC / *in_the.DAT prison with the.DAT criminal
 ‘In(to) the prison with the criminal!’
 b. der Weg auf den Berg
 the path on the.ACC hill
 ‘the path up the hill’
 c. der Weg den Berg hinauf
 the path the.ACC hill there-on
 ‘the path up the hill’

- (45-a) / (46-a) involves a light verb that assigns ACC and forms a complex predicate with the PP? But the DP (the undergoer) in (46-a) does not get case from a verb (instead surface with *met/mit*).
- (45-b) / (46-b): An incremental structure is provided by the noun *weg*, the postpositional phrase refers to the final location of this path; it does not modify the noun itself, i.e. this is no path that is - at all times - located on the hill, but this is a path that ends up on the hill; so the predicative relationship is intuitively clear; but what is the undergoer? The path?

7 Conclusion

- The PPs under discussion have a uniform internal structure with both word orders and both cases; e.g. PP_{loc} headed by a locative P specifying the location of a Figure with respect to the Ground.
- The directional-goal reading with locative Ps is merely derived PP-externally due to the embedding of the locative PP under PredP.
- By linking the postpositional order in Dutch and acc in German PPs to the overall context, it becomes possible to specify conditions that have to be met in order for it to emerge.
- By not linking the postpositional order to the necessity to license additional structure within the PP, associated with directionality, it becomes possible to unify all postpositional occurrences, also those of lexically directional Ps.
- The account offers an explanation for the match in the case marking between the internal argument and the complement of PP.
- The proposal does not postulate multiple lexical entries for the Ps involved, and does not add theoretical burden: We need something like this anyways for resultatives.
- Word order variation in Dutch and case alternation in German PPs is the reflex of the same PP-external syntax. This accounts for the similarities between these two languages. However, the mechanisms themselves (movement vs. case assignment) are sufficiently different to account also for the differences.

8 Appendix: Further evidence from Dutch

8.1 The PP behaves like a complement

- Dutch adjunct but not complement PPs can appear postverbally (47) (Hoekstra 1999, 77)

- (47) a. ... dat Jan zijn vriend {in Amsterdam} ontmoette {in Amsterdam}.
that John his friend {in Amsterdam} met {in Amsterdam}
'... that John met his friend in Amsterdam.' *PP adjunct*
- b. ... dat Jan de plant {in de vensterbank} zette *{in de vensterbank}.
that John the plant {in the window sill} put *{in the window sill}
'... that John put the plant on the window sill.' *PP complement*

Postpositional phrases behave like complements (48)

- (48) a. ... dat Jan {de kamer uit} danst *{de kamer uit}.
that John {the room out} dances *{the room out}
'... that John dances out of the room.'
- b. ... dat Jan {het meer in} zwemt *{het meer in}.
that John {the lake in} swims *{the lake in}
'... that John swims into the lake.'

- Difference in stress placement with PP adjuncts and PP complements (49) (Hoekstra 1999, 78)

- (49) a. naar GRONingen WANdelen
to Groningen walk
'to walk to Groningen' *PP adjunct*
- b. naar GRONingen wandelen
to Groningen walk
'to walk to Groningen' *PP complement*

Postpositional phrases behave like complements (50)

- (50) a. Jan is de KAMer uit gedanst.
John is the room out danced
'John danced out of the room.'
- b. Jan is het MEER in gezwommen.
John is the lake in swum
'John swam into the lake.'

8.2 The shared argument behaves like an internal argument of V

If a PP is integrated as a secondary resultative predicate and derives an accomplishment structure, as proposed here, there has to be an internal argument that can be both the external argument of the PP (the secondary predicate) and the internal argument of the verb (the main predicate), which undergoes some change measured by the BECOME event.

Intransitive manner of motion verbs seemingly pose a problem for the proposal, since the argument of such verbs in isolation behaves like an external argument (51).

- (51) They swam/danced/ran.

This is one of the reasons why Rothstein (2004) rejects the analysis of particular verb-PP combinations as involving secondary resultative predication.

- Perlmutter (1978); Burzio (1981); Hoekstra (1984) on auxiliary selection:
BE-selection in languages like Italian and Dutch is the reflex of unaccusativity.

In the underlying structure, the surface subject originates in an internal argument position.

- With intransitive motion verbs, non-directed motion events correlate with HAVE (52)

- (52) a. Ze heeft / *is gewandeld.
she has / *is walked
'She walked.'
- b. Ze heeft / *is in het bos gewandeld.
she has / *is in the forest walked
'She walked in(side) the forest.'

⇒ The DP in subject position behaves like an external argument.

- With intransitive motion verbs, directed motion events correlate with BE (53)

- (53) Ze *heeft / is naar Tilburg gewandeld.
she *has / is to Tilburg walked
'She walked to Tilburg.'

⇒ The DP in subject position behaves like an internal argument.

- Neeleman and van de Koot (2002): The only argument with intransitive manner of motion verbs is semantically both the initiator and the undergoer of the movement.
⇒ From a semantic point of view it has traits of arguments that are generally merged in external *and* internal argument positions.
- If there is no need to have an internal argument, the argument is merged in external argument position and the structure is unergative (54-a). However, secondary resultative predication is only possible with an internal argument, thus the underlying structure is unaccusative (54-b).

- (54) *Shift in auxiliary selection correlates with different syntactic structure*
- a. ... dat Jan wandelt.
that John walks
dat [Jan [wandelt]]
- b. ... dat Jan naar Tilburg wandelt.
that John to Tilburg walks
dat [[Jan]_i [[[t]_i naar Tilburg] wandelt]]

With postpositional phrases, the DP in subject position behaves like an internal argument:

- (55) a. Jan *heeft / is de kamer uit gedanst.
John *has / is the room out danced
'John danced out of the room.'
- b. Jan *heeft / is het meer in gezwommen.
John *has / is the lake in swum
'John swam into the lake.'
- c. Hij *heeft / is het bos door gelopen.
he *has / is the forest through walked
'He walked (all the way) through the forest.'

NB: Auxiliary selection additionally disambiguates between the bounded and unbounded reading of prepositional *door*-phrases, indicating that under the bounded reading (with BE) the PP is integrated as a resultative, whereas under the unbounded reading (with HAVE) it is a VP adjunct.

⇒ The generalisations 2 and 3, according to which there has to be an undergoer of a change of location, that is the subject of the secondary predicate and the internal argument of the verbal predicate, is still valid (contra Rothstein 2004).

8.3 The P in postposition behaves like other resultatives

In postpositional (but not prepositional) phrases, P and its complement can be separated by an adverbial like *graag* ‘gladly’, and P appears closer to the verb than to its complement (56).

- (56) ... dat Willemijn het meer graag in zwom.
that Willemijn the lake gladly in swam
‘... that Willemijn liked to swim into the lake.’

Resultative adjectives (57-a) and particles (57-b), which are commonly analysed as elements forming a complex predicate with the verb, behave similarly (57).

- (57) *Neeleman and Weerman (1993, 436)*
- a. ... dat Jan de deur (vaak) groen (*vaak) verfde.
that John the door (often) green (*often) painted
‘... that John often painted the door green.’
 - b. ... dat Jan het meisje (vaak) op (*vaak) merkte.
that John the girl (often) up (*often) noticed
‘... that John often noticed the girl.’

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