

PUTTING PATH IN PLACE

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1 Locative (stative) vs. directional (dynamic) prepositional phrases (PPs)

Semantics (Jackendoff, 1983; Zwarts and Winter, 2000; Kracht, 2002; Zwarts, 2005b, a.o.):

Locative PPs denote sets of places (locations)

Directional PPs denote sets of paths made up of places

Syntax (Koopman, 1997; van Riemsdijk and Huybregts, 2001; Helmantel, 2002; den Dikken, 2003; Svenonius, 2004, a.o.):

Locative PPs - Place structure

Directional PPs - Path structure that can embed Place structure

(1) [PathP [PlaceP [DP]]]

Locative, but not directional PPs can appear with stative verbs like *be*, *stay*, *remain*:

- (2) a. The box stayed in / on / under / behind the table.
b. *The box stayed to / into / onto / from / out of / through the table.

Diagnostics in the literature to test whether a P(P) is directional as opposed to locative???

Hypothesis 1: There are no lexically ambiguous Ps: Ps are either locative or directional

Hypothesis 2: Directional PPs are always complex

⇒ **Directional meanings with locative Ps must be structurally derived**

2 Verb-framed and satellite-framed languages

Talmy (1985, 1991, 2000): Which surface elements express the path of a Motion Event?

2.1 Satellite-framed languages

Verbs conflate Motion and Manner but not Path; Path is expressed by satellites

Satellites: 'immediate constituents of a verb root other than inflections, auxiliaries, or nominal arguments' / sister to the verb

(Indo-European (except Romance), Chinese, Finno-Ugric, Ojibwa, Warlpiri)

- (3) *Satellite-framed languages, e.g. English*
a. The bottle floated into the cave.
b. The bottle floated out of the cave.

2.2 Verb-framed languages

Verbs conflate Motion and Path; Manner of motion verbs cannot combine with path expressions
Manner is expressed separately, e.g. by a subordinate clause, or not expressed at all
(Romance, Semitic, Polynesian, Nez Perce, Caddo, Japanese, Korean)

- (4) *Verb-framed languages, e.g. Spanish*
- a. La botella entró a la cueva (flotando).
the bottle MOVED-in to the cave (floating)
The bottle floated into the cave.
 - b. La botella salió de la cueva (flotando).
the bottle MOVED-out of the cave (floating)
The bottle floated out of the cave.
 - c. *La botella flotó a la cueva.
the bottle floated to the cave

2.3 Problems

⇒ **‘Verb-framed’ Manner of motion verbs can combine with paths**

Manner of motion verbs in verb-framed languages cannot combine with **bounded** paths, unbounded paths are grammatical (Aske, 1989; Fong and Poulin, 1998; Stringer, 2002).

- (5) *French, Stringer (2002)*
- a. La fille a dansé vers la chambre.
the girl has danced towards the room
‘The girl danced towards the room.’
 - b. *La fille a dansé à la gare.
the girl has danced to the station

Correlation with ungrammaticality of resultative phrases in verb-framed languages (Fong, 1997; Folli, 2002; Mateu, 2002; Folli and Ramchand, 2005; Zubizarreta and Oh, in press)

- (6) *Italian, Folli and Ramchand (2005)*
- a. Gianni broke the vase open.
 - b. *Gianni a rotto il vaso aperto.
Gianni has broken the vase open

⇒ **Traits of different types within the same language**

Some Italian motion verbs encoding Manner (e.g. *correre* ‘run’, *rimbalzare* ‘bounce’, *saltare* ‘jump’) can combine with locative PPs to refer to a directed motion event (Folli, 2002, to appear), others cannot (**split into two types of manner of motion verbs**)¹

- (7) *Italian, Folli (to appear)*
- La palla è rimbalzata sotto il tavolo.
the ball is bounced under the table
- ‘The ball bounced (to a point) under the table.’

¹Fong and Poulin (1998) provide similar examples from French.

Italian **complex PPs** with *a* ‘at, to’ express a path, even with manner of motion verbs that cannot bring about a directed motion reading (Folli, to appear)

(8) *Italian, Folli (to appear)*

- a. La barca galleggiò dentro alla grotta.
the boat floated inside to.the cave
‘The boat floated into the cave.’
- b. La barca galleggiò dentro la grotta.
the boat floated inside the cave
‘The boat floated in the cave.’ (locative reading only)

⇒ ‘**Satellite-framed**’ English and ‘**verb-framed**’ Italian are quite similar

Both have complex PPs containing a locative P and a cognate of *to* to express a path²

Both have a set of motion verbs simultaneously encoding manner and directionality

Hypothesis 3: Cross-linguistic variation is due to differences in inventory and combinatorial possibilities of Ps in particular languages

(9) *French*

- *La fille dansait à dans la chambre / dans à la chambre.
the girls danced to in the room / in to the room

speculation: Romance *a* / Germanic *to*: different grammaticalisation stages from lexical locative P *at* to purely directional (possibly functional?) goal P *to* (see appendix)

3 Locative Ps in West Germanic

3.1 English and Dutch *in* and *on*

English *in*, *on* cannot be understood directionally in all contexts:

OK: *kick*, non-iterative *jump*, *throw*, *put*, *fall*, among others, henceforth ***put*-verbs**

NOT OK: *dance*, *crawl*, *walk*, *swim*, among others, henceforth ***swim*-verbs**

(see also Thomas, 2003; Tungseth, 2006; Nikitina, to appear)

(10) Sharon jumped in the lake.

- a. *paraphrase of the locative reading:*
Sharon jumped while being in the lake (i.e. the jumping took place in the lake).
- b. *paraphrase of the directional reading:*
Sharon jumped and (as a result) she ended up in the lake.

(11) Anna kicked the ball on the table.

- a. *paraphrase of the locative reading:*
Anna kicked the ball while being on the table (i.e. the kicking took place on the table).
- b. *paraphrase of the directional reading:*
Anna kicked the ball and (as a result) the ball ended up on the table.

²Note, however, that Folli (to appear) argues that Italian *a* is locative, whereas English *to* is always directional.

- (12) Shakuntala swam in the lake.
 a. *paraphrase of the locative reading:*
 Shakuntala swam while being in the lake (i.e. the swimming took place in the lake).
 b. **directional reading*
- (13) John danced on the stage.
 a. *paraphrase of the locative reading:*
 John danced while being on the stage (i.e. the dancing took place on the stage).
 b. **directional reading*

Similar split within motion verbs in Dutch:

- (14) a. Rick sprong in het meer. (locative / directional)
 Rick jumped in the lake
 ‘Rick jumped in the lake.’
 b. Willemijn zwom in het meer. (locative / *directional)
 Willemijn swam in the lake
 ‘Willemijn swam in the lake.’
- (15) a. Gert Jan schopte de bal op de tafel. (locative / directional)
 Gert Jan kicked the ball on the table
 ‘Gert Jan kicked the ball on the table.’
 b. Brigit dansde op het podium. (locative / *directional)
 Brigit danced on the stage
 ‘Brigit danced on the stage.’

Deriving directionality with swim-verbs and *in, on/op*:

- (16) *English complex PPs*
 a. Shakuntala swam into the lake.
 b. John danced onto the stage.
- (17) *Dutch postpositions*
 a. Willemijn zwom het meer in.
 Willemijn swam the lake in
 ‘Willemijn swam into the lake.’
 b. Brigit dansde het podium op.
 Brigit danced the stage on
 ‘Brigit danced onto the stage.’

3.2 English and Dutch *under* and *behind*

- (18) *ambiguity with English under (Higginbotham, 2000, among others)*
 The boat floated under the bridge.

BUT: different types of directional readings with different types of motion verbs

- (19) *with swim-verb: locative / directional-route*
 a. The boat floated under the bridge.
 b. Jakub swam behind the boat.

- (20) *with put-verb: locative / directional-goal*
- a. Nino kicked the ball under the table.
 - b. Giorgos jumped behind the goal.
- (21) *Three different kinds of directional readings (Jackendoff, 1983, among others)*
- a. source: FROM + AT / IN / ON ((away) from, out of, off)
 - b. goal: TO + AT / IN / ON (to, into, onto)
 - c. route: VIA + AT / IN / ON (along, through, across)

No ambiguity of **Dutch** *onder* ‘under’, *achter* ‘behind’ between locative and route reading

- (22) *Dutch under, behind + swim: locative only*
- a. Het vliegtuig vloog onder de brug. (locative / *goal / *route)
the plane flew under the bridge
‘The plane flew under the bridge.’
 - b. Janneke zwom achter de boot. (locative / *goal / *route)
Janneke swam behind the boat
‘Janneke swam behind the boat.’
- (23) *Dutch under, behind + put: ambiguous*
- a. Mirjam schopte de bal onder de tafel. (locative / goal)
Mirjam kicked the ball under the table
‘Mirjam kicked the ball under the table.’
 - b. Willemijn sprong achter het doel. (locative / goal)
Willemijn jumped behind the goal
‘Willemijn jumped behind the goal.’

Route reading in Dutch only with additional route postpositions with both types of verbs

- (24) *Dutch additional route postpositions*
- a. Het vliegtuig vloog onder de brug door. (*locative / *goal / route)
the plane flew under the bridge through
‘The plane flew via under the bridge.’
 - b. Janneke zwom achter de boot langs. (*locative / *goal / route)
Janneke swam behind the boat along
‘Janneke swam around behind the boat.’
 - c. Mirjam schopte de bal onder de tafel door. (*locative / *goal / route)
Mirjam kicked the ball under the table through
‘Mirjam kicked the ball under the table (on a path which lead from one side of the table underneath it to the other side).’
 - d. Huib sprong achter het doel langs. (*locative / *goal / route)
Huib jumped behind the goal along
‘Huib jumped around behind the goal.’

Dutch cannot use *onder*, *achter* in postposition to refer to a goal

- (25)
- a. *Janneke zwom de boot achter. (*goal)
Janneke swam the boat behind
 - b. *Het vliegtuig vloog de brug onder. (*goal)
the plane flew the bridge under

3.3 A fourth way to obtain directional readings with locative Ps: Case

- (26) *German in and on with DATIVE DPs: locative only*
- 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 in 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 on the table.'
- (27) *German in and on with ACCUSATIVE DPs: directional-goal only*
- 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.'
- (28) *German under and behind with DATIVE DPs: locative only*
- a. Das Boot trieb unter der Brücke.
the boat floated under the.DAT bridge
'The boat floated under the bridge.'
 - b. Luisa kickte den Ball unter dem Tisch.
Luisa kicked the ball under the.DAT bridge
'Luisa was under the table and kicked the ball.'
 - c. Klaus schwamm hinter dem Boot.
Klaus swam behind the.DAT boat
'Klaus swam behind the boat.'
 - d. Christina sprang hinter dem Tor.
Christina jumped behind the.DAT goal
'Christina jumped behind the goal.'
- (29) *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 das Tor.
Christina jumped behind the.ACC goal
'Christina jumped (to a location) behind the goal.'

(30) *German under and behind + DATIVE DPs + route postposition: route*

- a. Das Boot trieb unter der Brücke entlang.
the boat floated under the.DAT bridge along
'The boat floated on a path which lead under the bridge.'
- b. Luisa kickte den Ball unter dem Tisch durch.
Luisa kicked the ball under the.DAT table through
'Luisa kicked the ball on a path which lead under the table.'
- c. Klaus schwamm hinter dem Boot entlang.
Klaus swam behind the.DAT boat along
'Klaus swam behind the boat.'
- d. Christina sprang hinter dem Tor herum.
Christina jumped behind the.DAT goal around
'Christina jumped around behind the goal.'

3.4 Data summary

	<i>in, on + swim</i>	<i>under, behind + swim</i>	<i>in, on + put</i>	<i>under, behind + put</i>
locative	√	√	√	√
route	*	√	*	[?]
goal	* / √ + <i>to</i>	* / √ + <i>to</i>	√	√

Table 1: Locative Ps in English

	<i>in, on + swim</i>	<i>under, behind + swim</i>	<i>in, on + put</i>	<i>under, behind + put</i>
locative	√	√	√	√
route	*	* / √ + add. postp.	*	[?] / √ + add. postp.
goal	* / √ in postp.	* / * in postp.	√	√

Table 2: Locative Ps in Dutch

	<i>in, on + swim</i>	<i>under, behind + swim</i>	<i>in, on + put</i>	<i>under, behind + put</i>
locative	√	√	√	√
route	*	* / √ + add. postp.	*	* / √ + add. postp.
goal	*	*	*	*

Table 3: Locative Ps with dative DPs in German

- English *in, on* can be locative in all contexts and with all kinds of verbs, but there are restrictions on the availability of directional readings

English *under, behind* can be locative in all contexts and with all kinds of verbs, but there are restrictions on the availability of directional-goal as well as directional-route readings

	<i>in, on + swim</i>	<i>under, behind + swim</i>	<i>in, on + put</i>	<i>under, behind + put</i>
locative	*	*	*	*
route	*	* / * + add. postp.	*	* / * + add. postp.
goal	✓	✓	✓	✓

Table 4: Locative Ps with accusative DPs in German

Hypothesis 4: The perspectival (referential) axis in the definition of projective locative Ps like *under, behind* can license empty *via** in English (this is not possible in Dutch, German, Norwegian, Russian or Czech)

- Dutch *in, on, under, behind* can be locative in all contexts and with all kinds of verbs, but there are restrictions on the availability of directional readings
- German *in, on, under, behind* are locative only with the dative case, directional only with the accusative case or with the dative case and an additional directional postposition

Hypothesis 5: Accusative case inside German PPs is structural case, licensed under similar conditions as accusative case on direct objects

⇒ ***in, on, under, behind* are locative only** (contra Nam, 1995; Rooryck, 1996; Koopman, 1997; van Riemsdijk and Huybregts, 2001; den Dikken, 2003)

Directional readings are due to the combination with other elements in the sentence and can be associated with the complex event structure licensed by the verb, additional directional Ps (including empty *via**) or structural accusative case

3.5 Different strategies to derive goals

- (31) a. combining locative Ps with the goal P *to* into **complex PPs**: *into, onto; to behind, to under* etc. (English; Italian, Folli (to appear))
- b. **put-verbs** + *in, on* and other locative Ps (Dutch, English; Norwegian, Tungseth (2006); Italian, Folli (to appear))
put-verbs + *in front of, between* (Russian)
- c. *in, on* and other Ps in **postposition** (Dutch; Afrikaans, Biberauer and Folli (2004))
- d. **accusative case** marking on DP inside PP with (almost) all locative Ps (German; Czech, Russian; Latin, Greek, other Slavic languages)
- e. addition of **light verbs** like *come, go* (English, Dutch, Gehrke (in progress))

Comparison with Talmy (1985, 1991, 2000):

(31-a): satellite-framing, the path is associated with ‘satellite’ *to* (but fuzzy notion ‘satellite’)

(31-e): presumably verb-framing, Path is associated with the light verb

(31-b): verb-framing? Higginbotham’s (2000) telic pair formation? Problem then: the path component cannot be relegated to a single component in the sentence.

(31-c, d): satellite-framing(?) ⇒ fuzzy notion ‘satellite’: lexical P itself doesn’t express the path, goal reading is derived by syntactic operation (postpositions) or morphology (case marking) - the complex PP refers to a path

A language can employ both verb-framing and satellite-framing strategies (e.g. English, Italian)

⇒ **Talmy’s typology is too coarse-grained to provide a full picture of the way Motion Events are expressed cross-linguistically.**

4 Towards an analysis

4.1 Locative Ps

Locative Ps relate the location of an event or entity (the figure or the reference object) to the location of the ground (the landmark) in a particular way - locative PPs denote sets of places (for more formal analyses see Bierwisch, 1988; Creary et al., 1989; Wunderlich, 1991; Wunderlich and Herweg, 1991; Zwarts and Winter, 2000; Kracht, 2002, among others)

Locative Ps can be divided into projective and non-projective Ps (Jackendoff, 1983; Zwarts and Winter, 2000, among others):

Non-projective Ps (e.g. *in, on, at*) require only spatial knowledge about the location of figure and ground

Projective Ps (e.g. *under, behind*) require further information about or ‘directions’ from the ground

Cresswell (1978): a point of view can be established by a (hypothetical) journey ‘which an observer would have to make to be where the action is’ (Cresswell, 1978, 2)

Zwarts and Winter (2000): additional axes in the definitions of projective Ps, modelled along the lines of three orthogonal unit vectors in the vector space V for *up, right* and *front*

Svenonius (2004): additional projection $AxPartP$ with some locative Ps:

(32) $[_{PlaceP} \textit{in} [_{AxPartP} \textit{front} [_{KP} \textit{of} [_{DP} \textit{the palace}]]]]]$

The location *under the bridge* can get a one-dimensional path reading because the perspectival axis is reinterpreted as an axis of change (in the sense of Gawron, 2005, see appendix)

New problem: Why is this only possible in English?

4.2 Directional Ps

Zwarts (2005b): Directional Ps map the ground to a set of sequences of vectors (places), **paths**, where each of these sequences determines a potential change in position of the figure

Goals and sources involve a two-stage structure, a positive phase overlapping with either end point of the path (see Fong’s (1997) account in terms of phase quantification)

(33) *Definitions of English goal and source PPs in Zwarts (2005b)*
 { **p**: there is an interval $I \subset [0,1]$ including ...
 ... 0 and consisting of all the $i \in [0,1]$ for which **p**(i) is AT x } = \llbracket from x \rrbracket
 ... 0 and consisting of all the $i \in [0,1]$ for which **p**(i) is ON x } = \llbracket off x \rrbracket
 ... 0 and consisting of all the $i \in [0,1]$ for which **p**(i) is IN x } = \llbracket out of x \rrbracket
 ... 1 and consisting of all the $i \in [0,1]$ for which **p**(i) is AT x } = \llbracket to x \rrbracket
 ... 1 and consisting of all the $i \in [0,1]$ for which **p**(i) is ON x } = \llbracket onto x \rrbracket
 ... 1 and consisting of all the $i \in [0,1]$ for which **p**(i) is IN x } = \llbracket into x \rrbracket

This positive phase is some final location such as AT, ON, IN x (smallcaps in the definitions by me), the bounds of an incremental path

⇒ Final locations can be syntactically represented as PlacePs embedded under PathPs as in (34)

(34) $[_{PathP} [_{PlaceP} [_{DP}]]]$

Routes: do not refer to transitions into a place but rather to paths that are related to a given place in another way

Zwarts (2005b): Route PPs are associated with paths, where the figure potentially changes in location and some intermediate location is AT / IN / ON the ground

The path associated with route PPs does not necessarily have ending points and therefore is not necessarily bounded

A directional PP is **bounded** (telic) iff it does not have cumulative reference, where the definition of cumulativity involves the concatenation of paths (35)

- (35) A set of paths **X** is **cumulative** iff
- (i) there are **p** and **q** \in **X** such that **p+q** exists and
 - (ii) for all **p, q** \in **X**, if **p+q** exists, then **p+q** \in **X**.
- (Zwarts, 2005b, 12)

4.3 Deriving goals PP-internally

4.3.1 English

Final locations in the semantics of the directional PPs *into* and *onto* in (33) are lexically specified by the particular locative Ps *in* and *on*

The Place head of the PlaceP embedded under a PathP headed by *to* can either be filled with an empty AT (with *to*-phrases) or with lexical locative Ps like *in, on, under, behind* etc.

The heads *in* or *on* move and incorporate into *to* to form *into* and *onto* (cf. den Dikken (2003), Svenonius (2004))

- (36) [_{PathP} [_{Path'} *in_i-to* [_{PlaceP} [_{Place'} *t_i* [_{DP} the room]]]]]]

4.3.2 Dutch

Dutch postpositional phrases with *in/op* denote paths that end at a location *in/on* DP

Same complex Path structure as in English, only the way this structure is built up differs:

DP complements of PlacePs headed by *in/op* move to Spec PathP, identifying/licensing the Path structure (see Koopman, 1997; den Dikken, 2003, for discussion)

- (37) [_{PathP} [_{DP} *het meer*] [_{Path'} \emptyset [_{PlaceP} *in t_i*]]]]

semantic effect of this movement (Helmantel, 2002):

A DP in Spec PathP (the moved DP) is necessarily interpreted as a one-dimensional path (in the sense of Verkuyl and Zwarts, 1992)

Elements that cannot be construed as one-dimensional are banned from this position:

- (38) a. Jan stapt op de kiezelsteen. (Helmantel, 2002, 73)
 Jan steps on the pebble
 'Jan steps on the pebble.'
 b. #Jan stapt de kiezelsteen op
 Jan steps the pebble on

4.3.3 German

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

Table 5: Case marking with spatial prepositions in German

Generalisations

- DAT with all locatives and all Ps, which are unambiguously source and goal (the ‘basic’ ones)³
- ACC with route Ps and all directional PPs derived from locative ones⁴
- Almost all the derived meanings involve a goal reading (sole exception of *über* ‘over’, which gets a route interpretation)⁵
- ⇒ DAT is the ‘default’ prepositional case?
- ⇒ ACC is structural case, comparable to ACC on direct objects

Possible accounts

- Abraham (2001)

- Ps govern DAT
- ACC is governed ‘by the secondary predicate *hin-/her-* [‘here’, ‘there’], by the optional verb particle, or by a complex adverb of direction together with the verb of movement’

(39) (in) das Wasser hinein
(in) the.ACC water there-in
‘into the water’

³One could also think of treating goals and sources as points rather than paths. However, as argued for in Verkuyl and Zwarts (1992); Zwarts (2005b), then goals and their source counterpart would have the same denotation in cases the ending and the starting points are the same (as in e.g. *to the house* and *from the house*), although they clearly denote different paths. Hence, if we treated goals and sources as mere points we would not include the directionality involved in these PPs (by an ordered set of indices or the like) and lose this distinction.

⁴The only locative preposition that cannot appear with the accusative case and thus not derive directionality is *bei* ‘at’. I take this to be an idiosyncrasy though, since *an*, which also means ‘at’, behaves like other locatives and can appear with the accusative to become directional.

⁵For some reason, German *über* ‘above, over’ is different from *unter* ‘under’ in that it only gets a route but not a goal reading even with the accusative. Furthermore, *über* with an additional postpositional route element can also be used with an accusative DP for many speakers, although the dative is preferred. It is also interesting to note that Dutch *over* ‘over’ can appear in postposition, in contrast to *onder* ‘under’ or *achter* ‘behind’, and that in this position it gets a route but not a goal reading (see also den Dikken 2003; Zwarts 2005a). *Over* is also special in Russian and Czech.

- **Zwart (to appear)**

accusative case on objects marks a dependency relation between a subject and a predicate rather than one between the predicate and its object (40) (see also McFadden, 2004, for a similar idea)

(40) Structural objective (accusative) case is the morphological reflex of a higher order dependency between the subject and its sister. (Zwart, to appear)

Generalising Zwart's idea:

- Directional PPs are secondary, non-verbal predicates, predicated over the Theme argument (e.g. Hoekstra 1984; Neeleman 1994)

- ACC signals a dependency between the subject of the non-verbal predicate (the internal argument of the VP) and this secondary predicate

Problems:

- Not all predications involve accusative case: *be a teacher* is a predication but *a teacher* does not bear ACC (e.g. NOM in German, Russian, Czech)

- 'basic' directional Ps (*zu* 'to, *aus* 'out, *von* 'from) appear with DAT but the PPs are still secondary predicates \Rightarrow proposal only accounts for the emergence of ACC but not for its absence

- Other (non-)stories that could be generalised: **Kiparsky (1998, 2001); Kratzer (2004)**

4.4 Combining PPs with verbs

4.4.1 Account in terms of event structure (Higginbotham, 2000)

Events can be syntactically decomposed into sub-events, semantics is directly read off the syntax

Accomplishments are syntactically represented by ordered pairs of positions for events

Accomplishment interpretation may also stem from TELIC PAIR FORMATION ($\langle E, E' \rangle$) associated with Ps rather than with a verbal head:

(41) I flew my spaceship to the morning star.
fly (I, my spaceship, e) & to (the morning star, (e, e'))

The main predicate *to* bears an ordered pair of event positions (process + state)

First event of *to* gets identified with the single event position of *fly*

4.4.2 Account in terms of event shape (Zwarts, 2006)

Zwarts (2006): event structure is not sufficient to account for certain phenomena in the area of motion events (e.g. cross-categoriality, opposition, fictive motion)

SHAPE-function maps events to their trajectory or contour, represented through a path⁶

(42) $[[V PP]] = \{ e \in [[V]] : \text{SHAPE}(e) \in [[PP]] \}$

(41) + SHAPE function + definition of *to*-phrase in (33): *to*-PP restricts the denotation of *fly* to flying events along a path whose upper bound is 'AT the morning star'

⁶Zwarts takes this function to be a more restricted version of Krifka's (1998) TRACE function, and as the major ingredient of functions that Jackendoff (1983, 1996) uses to relate PATH concepts to EVENT concepts, like for instance the GO function. See also Hay et al. (1999) for a similar idea.

4.5 *put* vs. *swim*

Difference between *put*-verbs and *swim*-verbs can be captured in terms of the event structure associated with the particular verbs

Locative PPs can modify the final location of a complex event that makes reference to some change along an incremental path (building on Rothstein, 2004)

Similarities to structural ambiguity with certain adverbs, e.g. restitutive vs. repetitive *again* (Pustejovsky, 1991, a.o.)

⇒ **final location (result state) subevent of such a complex event has to be syntactically available in order to be modifiable by a locative PP**

4.5.1 *put*-verbs

a. *put*

Levin (1993): ‘refer to putting an entity at some location’

- (43) a. I put the book on/under/near the table. (Levin, 1993, 112)
 b. *I put the books.
 c. *I put on the table.

No ambiguity of the locative PP with *put*-verbs

PP has to be a locative PP, specifying the final location (43) or a directional PP which incorporates some final location (44-a) or which can be interpreted as a location (44-b, c):

- (44) a. I put the book onto the table. - to a location on the table
 b. I put the blanket across the table. - the blanket is extended over the table
 c. ?I put the book towards the table. - to a location close to the table

⇒ Events described by *put*-verbs refer to a change of location, final location is always specified by a locative PP

Potential problem: In languages with morphological case, the DP inside the PP bears accusative case and the other oblique case is ungrammatical (e.g. German, Czech) or can be used as well (e.g. Russian, Nikitina to appear)

b. Verbs expressing change

‘calibratable change of state’ verbs (*climb, fall, jump, plunge*) (Levin, 1993)

‘throwing’ verbs (*kick, hit, shoot*) which can refer to a ‘change of location’ (Levin, 1993)

Rothstein (2004), a.o.: Changes are associated with complex events that gradually (accomplishments) / instantaneously (achievements) change from $\neg\phi$ to a final state or location ϕ

Locative PPs can modify this final state or location

c. Directed motion verbs

Verbs of ‘inherently directed motion’ (*come, fall, plunge, tumble, go, ?climb*) specify the direction of motion ‘even in the absence of an overt directional complement’ (Levin, 1993)

⇒ such verbs have a path argument and behave like accomplishments, whose incremental process is associated with the path

The incremental nature of the path is lexically given by the verb itself and a locative PP can specify the upper bound of the path (the culmination)

4.5.2 *swim-verbs*

a. ‘manner of motion’ verbs (*crawl, float, jog, swim, walk, bounce, jump*)

b. ‘waltz’ verbs (*dance, waltz, jive*)

c. ‘carry’ verbs (*carry, drag, push, pull*)

d. ‘verbs of motion using a vehicle’ (*bike, ski, cruise, drive, fly*)

no specific direction of motion unless combined with explicit directional phrase (Levin, 1993)

⇒ such verbs are associated with a simple process event, no direct reference to a final state/location

The path with manner of motion verbs does not have a particular direction towards some location (e.g. zigzag-paths, paths all over a place *walk around the city all day*)

The path is not necessarily incremental in Rothstein’s (2004) sense

The nature of the path has to be lexically specified in order to be understood as incremental

5 Alternative accounts in the literature

5.1 ‘Telic pair formation’ revisited

Higginbotham’s (2000) account of verb-framed vs. satellite-framed languages:

Directed motion reading in English (45) is due to telic pair formation

- (45)
- a. *float under the bridge* (English)
directional reading: $\lambda y \lambda e \lambda e'$ (float(y,e) & under(y,x,e') & telic-pair(e,e'))
locative reading: $\lambda y \lambda e$ (float(y,e) & under(y,x,e))
 - b. *gallegiare sotto il ponte* (Italian)
float under the bridge
locative reading: $\lambda y \lambda e$ (float(y,e) & under(y,x,e))

1. V and P are unambiguous in both languages: V denotes process, P denotes location (compatible with data discussed in section 3 & analysis proposed in this talk)
2. Semantic parameter: operation of telic pair formation is available in satellite-framed but not in verb-framed languages

Unless there are additional constraints (which are not discussed in Higginbotham 2000), this operation should be freely available in all contexts in satellite-framed languages like English

BUT:

- Section 3: availability of directional readings with locative PPs is highly restricted
- Something like telic pair formation might also be available in ‘verb-framed’ Italian (7)
- Directional reading of (45)[a] is a route reading that does not necessarily involve telicity

Why have ‘telic pair formation’ at all?

Alternative account:

Two ‘event positions’ $\langle e_1, e_2 \rangle$ **always have to be lexically supplied in both types of languages** (with incremental path associated with the first and something like a result state associated with the the second). This can be done either by:

- a. a complex directional PP (as in (41), Folli’s (2002) accomplishment Ps), or
- b. a *put*-verb (i.e. an accomplishment verb)

put-verb cases are different from (45-a): the verb itself is lexically specified for two event positions, where the PP merely modifies the second event (the result state)

- (46) *jump in the lake*
 $\lambda y \lambda e \lambda e' (\text{jump}(y, e, e') \ \& \ \text{in}(y, \text{the lake}, e'))$

Under the locative reading of *jump in the lake*, the PP modifies the whole event (the macro-event) of iterated minimal jumping events:

- (47) $\lambda y \lambda e (\text{jump}(y, e) \ \& \ \text{in}(y, \text{the lake}, e))$

- (48) $[_{VP} [_{\text{PlaceP}} \textit{in the lake}] [_{VP} \textit{DP jump}]]$

Tungseth (2006): syntactic tests showing that locative and directional reading with *in/on* and *put*-verbs (where available) are associated with different structural positions that these phrases occupy with respect to the VP

5.2 Folli (2002)

English: accomplishment adjunction with simple Ps, but no accomplishment creation

Italian: accomplishment creation with simple Ps, but no accomplishment adjunction

accomplishment adjunction

- a P like *to, into, onto* associated with two event positions $\langle e_1, e_2 \rangle$ is adjoined to a manner of motion verb with a single event position e_3 which gets unified with e_1 by theta-identification (in the sense of Higginbotham, 2000); English *under* is ambiguous between a locative and a directional reading

- Italian does not have Ps like *to, into, onto*; Italian *under* is locative only

BUT:

- *to, into, onto* are complex and not simple Ps (AT, IN, ON + TO, where *at* is always empty *at**, see Cresswell 1978)

- *under* is locative only in both languages; a route reading is not necessarily associated with two event positions

- Italian has complex PPs as well (see (8)), these are just less productive

- potential problem with optional features

- potential problem with analysis in terms of adjunction rather than complementation

accomplishment creation

- Italian has one group of manner of motion verbs with two different feature specifications (polysemy), which correlates with different auxiliary selection; under one feature specification these verbs can license the result state event projection whose event position gets identified with the event position of a locative P
- English does not have manner of motion verbs that are polysemous in this sense

BUT:

- *put*-verbs in English (and Dutch) can license directional readings with locative Ps as well and should be analysed on a par with the Italian verbs that can do so
- potential problem with polysemy

Rather: both languages have the same mechanisms, and the difference resides in *to* vs. *a*

5.3 van Riemsdijk and Huybregts (2001)

English *on*-phrase is always ambiguous between a locative and a directional meaning
Directional reading available in PP-with-NP constructions without additional element (e.g. a verb) to provide directional meaning:

(49) On the table with those plates! (van Riemsdijk and Huybregts, 2001, 13)

BUT:

Under the lexical ambiguity account, *on*-phrases should be ambiguous in all contexts, irrespective of the environment they appear in, but they are not:

- Directional reading only comes about when a final location or a result state subevent is present that can be further modified by a PlaceP
- This final location is either embedded under a PathP, associated with some directional P, or provided by a verb that is associated with a complex transitional event structure

(50) a. De gevangenis in met die crimineel! (Helmantel, 2002, 35)
the prison in with that criminal
b. In de gevangenis met die crimineel! (Mirjam Rigterink, p.c.)
in the prison with that criminal

(51) a. Ins Gefängnis mit diesem Verbrecher!
in.the.ACC prison with that criminal
b. *In dem Gefängnis mit diesem Verbrecher!
in the.DAT prison with that criminal

Do cases like (49) and (50-b) involve verb ellipsis or an empty light verb of the *put*-type that enables the path reading?

(52) a. Het meer over met die boot! (~ sailing event, Jenny Doetjes, p.c.)
the lake over with that boat
b. Over het meer met die boot! (~ throwing event, Jenny Doetjes, p.c.)
over the lake with that boat

6 Summary

English, Dutch, German *in, on, under, behind* are locative only

A goal reading is available with these Ps with *put*-verbs but not with *swim*-verbs:

- *put*-verbs license complex event structure & final location can be modified by locative PPs
- *swim*-verbs are processes, and locative PPs can only modify the event as a whole

Goal readings can be structurally derived by:

- additional goal Ps (English)
- movement of the complement of P to Spec PathP to license PathP (Dutch)
- structural accusative case on the complement of P (German)

Route readings can be structurally derived by:

- additional empty route P *via** associated with a perspectival axis in the definition of projective Ps (English)
- additional route postpositions (Dutch, German)

Contra Talmy, genuinely Germanic verbs (some *put*-verbs) can conflate path, motion, manner

Languages differ with respect to the inventory and combinatorial possibilities of Ps

7 Appendix

7.1 Speculations on the grammaticalisation of *to* as a functional (?) goal element

On grounds of the fact that Italian *a*, which is sometimes glossed and translated as ‘at’ and sometimes as ‘to’, can appear in stative contexts, Folli (2002, to appear) argues that it is locative just like all other simple Ps (53).

- (53) a. Gianni è a casa.
Gianni is A home
‘Gianni is at home.’
- b. Gianni vive a Milano.
Gianni lives A Milan
‘Gianni lives in Milan.’

However, a phrase like *a casa* is peculiar in that the P is followed by a bare singular NP (or a place name) as opposed to DPs with complex PPs or with other Ps like *sotto* ‘under’ etc. Furthermore, native speakers I consulted note that the locative reading in other combinations of *a* and a noun is rather old-fashioned or book style. So it could be the case that expressions such as *a casa* are frozen forms or idiosyncrasies. In other contexts, then, *a* rather conveys the directional meaning ‘to’ and could thus be treated like its English counterpart.

An indication in support of such a treatment is the fact that there are parallel examples with *to* and bare singular NPs or a place name in stative contexts in German (54) and Dutch (55).

- (54) German *zu* ‘to’ in locative contexts
- a. Jutta ist zu Hause.
Jutta is to house.DAT
‘Jutta is at home.’
- b. der Dom zu Köln
the cathedral to Cologne
‘the cathedral of Cologne’

(55) *Dutch te 'to' in locative contexts*

- a. Vera is thuis.
Vera is to-house
'Vera is at home.'
- b. gevestigd te Utrecht
established to Utrecht
'established in Utrecht'

Both languages employ a direct cognate of English *to* (German *zu*, Dutch *te*) to refer to a location involving a place name or a conventionalised place. The only difference is that this P is unproductive in Dutch (the directional meaning *to* can only be expressed by the P *naar*, which is etymologically related to English *near*), whereas German still productively employs this P to refer to a goal-oriented path rather than a place (56).

- (56) a. Natascha rennt zum Haus.
Natascha runs to.the.DAT house
'Natascha runs (is running) to the house.'
- b. *Hannes ist / bleibt / wohnt zum Haus.
Hannes is / stays / lives to.the.DAT house
'Hannes is / stays / lives to the house.'

There is another goal-oriented P with the meaning 'to' in German, namely *nach*, which is the direct cognate of Dutch *naar*. This P is used only with place names and the bare singular NP *Haus* to refer to 'home' (57), hence it is the directional counterparts of examples like those in (54).

- (57) a. Irene rennt nach Hause.
Irene runs to house.DAT
'Irene runs (is running) home.'
- b. Roland kommt nach Hamburg.
Roland comes to Hamburg
'Roland comes (is coming) to Hamburg.'

In all other cases, *zu* with a full DP is used (58).

- (58) Martin rennt zum Tisch / zur Schule / zum anderen Ende der
Martin runs to.the.DAT table / to.the.DAT school / to.the.DAT other end the.GEN
Stadt ...
city ...
'Martin runs (is running) to the table / to school / to the other end of town ...'

Therefore, we can assume that *zu* is the standard and productive goal preposition in German. So we could speculate that the grammaticalisation process of *to* from the purely locative meaning *at* to the goal meaning is completed in German (and possibly English), whereas it led to the complete loss of *to* in Dutch, where it only remains in frozen expressions. French *à*, in turn, is productively used for both the locative *at* and the directional *to*.

7.2 Perspectival axes

Contextual axes play a role in other areas apart from projective prepositions. Gawron (2005), for example, argues for the need of a ‘spatial axis, an ordered set of collinear points that can serve as an axis of change’ (Gawron, 2005, 5f.) to account for the difference between eventive and extent readings of extent verbs and degree achievements. This is demonstrated in (59) (Gawron, 2005, 1).

- (59) a. The fog extended from London toward Paris. (ambiguous)
 b. Fog gradually covered the city. (event reading only)
 c. Fog covered the city for three hours. (extent reading only)

(59-a) is ambiguous between a situation where fog literally moves from London into the direction of Paris and thus progresses in time (event reading), and a situation where the fog simultaneously covers the whole area between London and close to Paris irrespective of time (extent reading). (59-b,c) show that adverbials can disambiguate between these two readings. Thus, the extent reading does not involve any movement in time, and there is still the need for some axis to describe change that is ‘independent of time’ as in (60).

- (60) The boiling point of water drops 3 degrees Fahrenheit between sea level and 4000 feet. (Gawron, 2005, 6)

This example shows that there is a functional dependence between altitude and boiling point in the sense that the boiling point falls, as the altitude increases. Change with respect to time, then, is just a special case of functional change, ‘the existence of some correlation between two ordered domains’ (Gawron 2005:6).

Similarly, Fong (1997) uses some kind of perspectival or referential axis to account for data of the type in (61) (Fong 1997:32f.).

- (61) a. a bridge into San Francisco
 b. a bridge out of San Francisco

In principle, these two PPs can be used to describe the same bridge, only that the perspective is switched since in the second case the axis points away from San Francisco. Hence, the existence of contextually provided spatial axes that, according to Gawron (2005), can function as an axis of change, is well motivated and could account for the fact that the English projective locative prepositions *under* and *behind* can have a directional reading.

7.3 Semelfactives (Rothstein, 2004)

Semelfactive verbs like *jump*, *wink*, *kick (the door)*, *flap a wing* are systematically ambiguous: activity reading - compatible with temporal *for*-adverbials (62-a)
 single event / achievement reading - compatible with *at x time* (62-b)

- (62) a. John jumped for ten minutes. (Rothstein, 2004, 184)
 b. John jumped at ten o’clock.

‘Normal’ activities (e.g. *running*) are cumulative predicates that can be arbitrarily divided into minimal events (of *running*), which are in the denotation of a singular (but not atomic) set.

Semelfactives, are activities, whose minimal events are natural atomic functions: Two minimal events of running may overlap, but two minimal events of jumping must not.

Minimal events of semelfactives but not those of ‘normal’ activities are lexically accessible.⁷

⇒ Since the minimal event of a semelfactive is lexically accessible, reference can be made to a set of atomic events, and such events are telic by definition. Telic events, in turn, are associated with a change into a final state or location, that can be modified by a locative PP.

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⁷Cross-linguistic evidence in support of Rothstein’s (2004) analysis comes from Slavic languages like Russian or Czech, where the semelfactive reading of the particular verbs is systematically distinguished from the activity or iterative reading by the semelfactive suffix *-nu/-nou-* (e.g. Russ. *pryg-at* vs. *pryg-nu-t* ‘to jump’).

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