

PUTTING PATH IN PLACE

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

- **Semantics** (Jackendoff, 1983; Zwarts and Winter, 2000; Kracht, 2002; Zwarts, 2005, among others):

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, among others):

Locative PPs - Place structure

Directional PPs - Path structure embedding Place structure

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

⇒ Directional PPs are more complex than locative PPs, both syntactically and semantically

Locative, but not directional PPs can be complements of 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???

- **This talk:**

There are no lexically ambiguous Ps (English, Dutch, German)

Ps are either locative or directional

Directionality with locative Ps is systematically derived

2 Verb-framed and satellite-framed languages

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

- **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*
- The bottle floated into the cave.
 - The bottle floated out of the cave.

- **Verb-framed languages**

Verbs conflate Motion and Path

Manner is expressed separately, e.g. by a subordinate clause, or not expressed at all

Manner of motion verbs cannot combine with Path expressions

Romance, Semitic, Polynesian, Nez Perce, Caddo, Japanese, Korean

- (4) *Verb-framed languages, e.g. Spanish*

- La botella entró a la cueva (flotando).
the bottle MOVED-in to the cave (floating)
The bottle floated into the cave.
- La botella salió de la cueva (flotando).
the bottle MOVED-out of the cave (floating)
The bottle floated out of the cave.

- **Talmy's typology needs to be refined**

Manner of motion verbs in verb-framed languages cannot combine with bounded Paths

unbounded Paths are grammatical (Aske, 1989; Stringer, 2002):

- (5) *French, Stringer (2002)*

- La fille a dansé vers la chambre.
the girl has danced towards the room
'The girl danced towards the room.'
- *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; Mateu, 2002; Folli and Ramchand, 2005; Zubizarreta and Oh, in press):

- (6) *Italian, Folli and Ramchand (2005)*

- Gianni broke the vase open.
- *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, to appear):

- (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.'

French non-agentive change of location verbs can combine with locative PPs to refer to a directed motion event (Fong and Poulin, 1998):

- (8) *French, Fong and Poulin (1998)*

La balle a roulé dans la boîte.
the ball has rolled in the box

‘The ball rolled into the box.’

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

- (9) *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)

⇒ Difference in inventory and combinatorial possibilities of adpositions in particular languages:

- (10) *French*

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

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

Both have complex PPs containing a locative P and a cognate of *to* express Path¹

Both have a set of motion verbs simultaneously encoding manner and directionality (see below)

Contra Talmy, there are a number of genuinely Germanic verbs that simultaneously encode Path and Motion and thus behave like verbs in ‘verb-framed’ languages

3 Locative Ps in West Germanic

3.1 English and Dutch *in* and *on*

English *in*, *on* cannot be understood directionally in all contexts (see also Thomas, 2003; Tungseth, 2006; Nikitina, to appear):

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

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

- (11) 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.

¹Folli (to appear) does not draw this parallel, though, but argues that Italian *a* is a locative preposition.

- (12) Anna kicked the ball on the table.
- paraphrase of the locative reading:*
Anna kicked the ball while being on the table (i.e. the kicking took place on the table).
 - paraphrase of the directional reading:*
Anna kicked the ball and (as a result) the ball ended up on the table.
- (13) Shakuntala swam in the lake.
- paraphrase of the locative reading:*
Shakuntala swam while being in the lake (i.e. the swimming took place in the lake).
 - *directional reading*
- (14) John danced on the stage.
- paraphrase of the locative reading:*
John danced while being on the stage (i.e. the dancing took place on the stage).
 - *directional reading*

Similar split within motion verbs in Dutch:

- (15) 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.'
- (16) 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.'

Similar split in Norwegian (Tungseth, 2006)

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

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

3.2 A fourth strategy to get directional readings with locative Ps: Case

- (19) *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.'
- (20) *German in and on with ACCUSATIVE DPs: directional 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.'

3.3 Data summary and implications

	locative	directional
English <i>in, on</i> + swim	✓	*
English <i>in, on</i> + put	✓	✓
English <i>in, on</i> + <i>to (=into, onto)</i> + swim, put	*	✓
Dutch <i>in, on</i> in preposition + swim	✓	*
Dutch <i>in, on</i> in preposition + put	✓	✓
Dutch <i>in, on</i> in postposition + swim, put	*	✓
German <i>in, on</i> + swim, put + DATIVE	✓	*
German <i>in, on</i> + swim, put + ACCUSATIVE	*	✓

Table 1: Locative Ps in West Germanic

in, on can be locative in all contexts and with all kinds of verbs (unless directionality is structurally derived), but there are restrictions on the availability of directional readings

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

⇒ **There are precise conditions that have to be met for a directional reading to be possible**

- Different strategies to mark goals:

- (21) 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, op* 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)

- Comparison with Talmy (1985, 1991, 2000):

(21-a): satellite-framing, Path is associated with satellite *to*

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

(21-c, d): satellite-framing(?) \Rightarrow fuzzy notion ‘satellite’: lexical P doesn’t express Path, goal reading is derived by syntactic operation (postpositions) or morphology (case marking)
 A language can employ both verb-framing and satellite-framing strategies (e.g. English, Italian)
 \Rightarrow **Talmy’s typology is too coarse-grained to provide a full picture of the way Motion Events are expressed cross-linguistically.**

- Remainder of the talk:

Mechanisms of deriving directional readings with *in, on/op*

put-verbs vs. *swim-verbs*

(Emergence of accusative case in German PPs)

(other locative Ps like *under, behind*)

4 The analysis

Syntax of directional PPs: general consensus for structure in (22) (Koopman, 1997), (Helmantel, 2002; van Riemsdijk and Huybregts, 2001; den Dikken, 2003; Svenonius, 2004)

- (22) [PathP [PlaceP [DP]]]

Mirrors the conceptual structure of PPs (Jackendoff, 1983, and subsequent work) and the semantics commonly attributed to these PPs

- Vector space semantic approach (but see also Fong, 1997; Kracht, 2002)

(Zwarts, 1997; Zwarts and Winter, 2000; Zwarts, 2005)

Locative PPs denote sets of vectors, ‘directed line segments between points in space’

Directional Ps map the reference object to a set of sequences of vectors, paths, where each of these sequences determines a potential change in position of the located object

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

Two-stage structure, positive phase overlaps with the end point **p**(1) (see also Fong's (1997) account in terms of phase quantification)

This phase is some final location such as AT, ON, IN x (smallcaps in the definitions by me)
⇒ Final locations can be syntactically represented as PlacePs embedded under PathPs as in (22)

4.1 Deriving goals PP-internally

English:

Final locations in the semantics of the directional PPs *into* and *onto* in (23) 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))

- (24) [PathP [Path' in_i-to [PlaceP [Place' t_i [DP the room]]]]]]

Dutch:

(Given similar distribution and semantic effects as in English)

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

Same general complex Path structure, 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)

- (25) [PathP [DP het meer] [Path' ø [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:

- (26) 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

4.2 Combining PPs with verbs

- Account in terms of event structure (Higginbotham, 2000) (see also Pustejovsky 1991; Ramchand to appear)

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:

- (27) I flew my spaceship to the morning star.
 $\text{fly}(\text{I}, \text{my spaceship}, e) \& \text{to}(\text{the morning star}, (e, e'))$

to is the main predicate which bears an ordered pair of event positions

fly has a single event position

First event of *to* gets identified with the single event position in the verb

- **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 path²

- (28) $\llbracket V PP \rrbracket = \{ e \in \llbracket V \rrbracket : \text{SHAPE}(e) \in \llbracket PP \rrbracket \}$

A (directional) PP restricts the denotation of a verb (a set of events) to those events that have paths in the PP denotation as their shape.

(27) + SHAPE function + definition of *to*-phrase in (23): *to*-PP restricts the denotation of *fly* to events that are transitions into the location ‘AT the morning star’

4.3 *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 (see Rothstein (2004) for a treatment of accomplishments and incrementality)

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

- ***put*-verbs: heterogeneous group**

1. *put*

Levin (1993): ‘refer to putting an entity at some location’ expressed by a locative PP

Omitting the PP or the internal argument DP results in ungrammaticality:

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

²Zwarts 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), Jackendoff (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.

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

PP has to be a locative PP, specifying the final location (29) or a directional PP which incorporates some final location (30-a) or which can be interpreted as a location (30-b, c):

- (30) 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

2. verbs expressing change

'calibratable change of state' verbs (*climb, fall, jump, plunge*)

'throwing' verbs (*kick, hit, shoot*) which can refer to a 'change of location'

transitive uses of some 'roll' verbs (*bounce, roll, slide, glide*) that can refer to a 'change of position'

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

Locative PPs can modify this final state or location

3. 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)

⇒ These 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

• *swim*-verbs

1. 'manner of motion' verbs (*crawl, float, jog, swim, walk, bounce, jump*)
2. 'waltz' verbs (*dance, waltz, jive*), 'carry' verbs (*carry, drag, push, pull*)
3. intransitive uses of 'roll' verbs, which refer to manners of motion
4. 'verbs of motion using a vehicle' (*bike, ski, cruise, drive, fly*)

do not refer to a specific direction of motion 'unless they occur with an explicit directional phrase' (Levin, 1993)

⇒ such verbs are associated with a simple process event, no direct reference to a final state or 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 (usually by a directional PP) in order to be understood as incremental

- Verbs in more than one of Levin's (1993) verb classes

1. intransitive vs. transitive 'roll' verbs
2. verbs such as *jump* as 'manner of motion' verbs or 'calibratable change of state' verbs

Semelfactives (Rothstein, 2004) (see also Smith, 1991/97)

Semelfactive verbs like *jump*, *wink*, *kick (the door)*, *flap a wing* are systematically ambiguous:
 activity reading - compatible with temporal *for*-adverbials (31-a)
 single event / achievement reading - compatible with *at x time* (31-b).

- (31) 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

A number of cases where semelfactives differ from 'normal' activities, e.g.: nominalisations of semelfactives (*jump*, *kick*) refer to a single minimal event whereas those of normal activities (*run*, *walk*, *swim*) refer to extended activity events.³

⇒ 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.

4.4 Do we need telic pair formation?

Higginbotham's (2000) account of the difference between verb-framed and satellite-framed languages:

Directed motion reading in English (32) is due to telic pair formation

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

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

³Cross-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').

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:

Data discussion in section 3: availability of directional readings with locative PPs is highly restricted

Italian data in (7): something like telic pair formation might also be available in limited cases in this ‘verb-framed’ language

The directional reading of (32)[a] is a route, rather than a goal reading and does not necessarily involve telicity

Apart from the possibility that an incremental path can be supplied by a directional PP (as in (27)), it can also be supplied by a *put*-verb itself

put-verb cases do not involve telic pair formation - the verb itself is lexically specified for two event positions, where the PP merely modifies the second event (the result state):

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

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

- (34) $\lambda y \lambda e (\text{jump}(y, e) \& \text{in}(y, \text{the lake}, e))$
(35) [VP [PlaceP *in the lake*] [VP 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

4.5 *in/on* are not lexically ambiguous

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

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:

- (36) 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

There is no reason why a motion verb would block a directional reading that should be freely available with these prepositions if they were lexically ambiguous

- (37) 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
- (38) a. Ins Gefaängnis mit diesem Verbrecher!
 in.the prison.ACC with that criminal
 b. *In dem Gefaängnis mit diesem Verbrecher!
 in the prison.DAT with that criminal

Do cases like (36) and (37-b) involve verb ellipsis or an empty light verb of the *put*-type that enables the path reading?

5 Summary

English, Dutch, German *in/on* are locative only

A directional reading is available with these Ps with *put*-verbs but not with *swim*-verbs:
put-verbs license a complex transitional event structure whose final location can be modified by locative PPs; *swim*-verbs are simple 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)

There are quite a number of genuinely Germanic verbs that conflate path and motion, and thus behave like verbs in verb-framed languages, namely the *put*-verbs

Telic pair formation is highly restricted and possibly not available at all

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