

PREDICATION OF PATH IN FRENCH AND JAPANESE *

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Abstract

Typological investigations by Talmy (e.g. 1985, 1991) have shed much light on how a universal semantics of motion events underlies the crosslinguistic expression of such events in syntax. Semantic elements that play important roles in motion events include the PATH of a moving object and its MANNER of motion. Talmy highlights a two-way typological distinction: (i) ‘verb-framed’ languages canonically encode PATH in the verb, whilst (ii) ‘satellite-framed’ languages encode PATH in a ‘satellite’ to the verb (e.g. an adposition). This is illustrated in the following French examples, where (ii) is ungrammatical on a PATH reading: (i) *La fille a descendu la colline en dansant* (the girl went-down the hill dancing); (ii) **La fille a dansé en bas de la colline* (the girl danced down the hill).

With reference to examples from French and Japanese, I maintain that this typological distinction only holds where the PATH has a boundary or endpoint. Adapting both Emonds’ (1991, 2000) extension of subcategorization theory and Jackendoff’s (1991, 1996) analysis of boundedness as a conceptual feature, I suggest that boundedness can be formally expressed as a syntactic feature [\pm b], and show that French and Japanese allow the lexicalization of [PATH, -b] in P (e.g. *towards*), but exclude P [PATH, +b] (e.g. *across*). In addition, the feature [PATH] must be carried on closed-class or semi-lexical predicates (adpositions and ‘basic motion verbs’ such as *go-up*, *go-down*, *cross*, etc.).

Apparent counterexamples in Italian serve to illustrate the morphosyntactic nature of [\pm b]. The complex preposition *giù per* (‘down’) may combine with MANNER verbs as the boundedness specification is determined by *per* (‘through’), which is inherently [-b]. I conclude that the interaction of the syntactic features [\pm PATH] and [\pm b] on verbal and prepositional predicates can account for much of the semantics of motion events in at least Japanese, Romance and English.

1. Introduction: The crosslinguistic expression of PATH

That universal semantic elements play a pivotal role in the linguistic expression of motion events is assumed in various theories of grammar influenced by Talmy’s (e.g. 1985, 1991, 2000) work on event semantics. Semantic primitives proposed by Talmy (1985) include the FIGURE, which is the object moved or located in relation to another object, termed the GROUND; MOTION, which expresses the presence of motion or location in the event; the MANNER of motion; and the PATH of a moving object. Talmy claims that there are two major typological categories as regards the lexicalization of PATH: (i) ‘verb-framed’ languages (e.g. Romance, Semitic, Polynesian) canonically encode PATH in the verb; (ii) ‘satellite-framed’ languages (e.g. Atsugewi, Chinese, all Indo-European except Romance) encode it in a ‘satellite’ to the verb, such as an adposition. For example:

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- (1) FIGURE MOTION PATH GROUND MANNER
 La fille a descendu la colline en dansant
 the girl went-down the hill dancing (French: verb-framed)
- (2) FIGURE MOTION MANNER PATH GROUND
 The girl danced down the hill (English: satellite framed)

In Section 2, I present data from French and Japanese which illustrate the need for a more fine-grained analysis necessarily involving the aspectual notion of ‘boundedness’. I then argue in Section 3 that Talmy’s insights may be incorporated into a more formal characterization of motion events, and summarize relevant aspects of Emonds’ (1991, 2000) fusion of the theories of subcategorization (Chomsky, 1965) and conceptual semantics (Jackendoff, 1990). This constitutes the basic representational framework to be refined in subsequent analysis. In Section 4, I argue for a morphosyntactic treatment of boundedness, with cross-functional applications of the kind proposed in Jackendoff’s (1991, 1996) non-syntactic analysis of this phenomenon. I return to the data in Section 5, maintaining that that the general lexicalization pattern and apparent counterexamples can be captured by the interplay of two features - PATH and BOUNDARY - in a syntactic treatment of the semantics of motion events.

2. Paths and boundaries in French and Japanese

Talmy’s observations appear to hold in French and Japanese in most instances. The point of concern here is the syntactic category in which PATH is lexicalized, rather than the specific manner of motion (e.g. *dance*, *roll*, *slide*, *walk*) and how the latter is realized (e.g. *walking* vs. *on foot*). As shown below, PATH must typically be expressed in a ‘basic motion verb’ rather than in a preposition in French.¹

- (3) La fille est *entrée* dans la salle en dansant.
 the girl AUX:is entered in(to) the room by dancing
 ‘The girl danced into the room.’ (entered...dancing)
- (4) *La fille a *dansé* dans la salle. (*on PATH reading)
 the girl AUX:has danced in(to) the room
 ‘The girl danced into the room.’ (danced *into*)

The latter example is grammatical on a purely locational interpretation (i.e. the room was the place in which the girl danced), but cannot support a path interpretation (i.e. she danced from outside to inside the room).

¹ Due to constraints of space, full glosses are only provided for the first French and Japanese examples. In subsequent examples, how PATH is lexicalized is indicated in italics and glossed in parentheses.

The generality of this lexicalization pattern may be seen in the following examples.

- (5) La fille est *sortie* de la salle en dansant.
 ‘The girl danced out of the room.’ (went-out...dancing)
- (6) La fille est *passée* devant la porte en dansant.
 ‘The girl danced past the door.’ (passed in front of...dancing)
- (7) La fille est *passée* par (l’embrasure de) la porte en dansant.
 ‘The girl danced through the door(way).’ (passed through...dancing)
- (8) La fille a *monté* l’escalier en dansant.
 ‘The girl danced up the stairs.’ (went-up...dancing)
- (9) La fille a *descendu* l’escalier en dansant.
 ‘The girl danced down the stairs.’ (went-down...dancing)
- (10) La fille est *rentrée* à la maison en dansant.
 ‘The girl danced back to the house.’ (went-back...dancing)
- (11) La fille a *traversé* la rue en dansant.
 ‘The girl danced across the street.’ (crossed...dancing)

Japanese also exhibits the constraint whereby PATH must be lexicalized in a ‘basic motion verb’, as shown in the following contrast:²

- (12) Onna-no-ko wa heya ni odotte *haitta*.
 woman-GEN-child TOP room (in)to dancing entered
 ‘The girl danced into the room.’ (dancing entered)
- (13) *Onna-no-ko wa heya ni *odotta*.
 woman-GEN-child TOP room (in)to danced
 ‘The girl danced into the room.’ (into danced)

Further examples illustrate a paradigm parallel to that seen in French.

- (14) Onna-no-ko wa heya kara odotte *deta*.
 ‘The girl danced out of the room.’ (dancing left)
- (15) Onna-no-ko wa doa o odotte *toorisugita*.
 ‘The girl danced past the door.’ (dancing passed)
- (16) Onna-no-ko wa doa o odotte *toorinuketa*.
 ‘The girl danced through the door(way).’ (dancing passed-through)
- (17) Onna-no ko wa kaidan o odotte *nobotta*.
 ‘The girl danced up the stairs.’ (dancing went-up)
- (18) Onna-no ko wa kaidan o odotte *orita*.
 ‘The girl danced down the stairs.’ (dancing came-down)
- (19) Onna-no ko wa ie ni odotte *kaetta*.
 ‘The girl danced back to the house.’ (dancing went-back)

² These Japanese examples make use of the *te*-form (*odoru* = ‘dance’; *odotte* = ‘dancing’), rather than the alternative expression with *nagara* (*odori nagara* = ‘while dancing’). Whilst speakers often prefer one or the other with particular verbs, both are grammatical, and the generalizations discussed in this paper are true in either case.

- (20) Onna-no-ko wa michi o odotte *yokogitta*.
 ‘The girl danced across the street.’ (dancing *crossed*)

However, the above cases are all *bounded* PATHS, where the boundary or endpoint must be reached if the sentences are to remain true. When the PATH is *unbounded*, MANNER in the verb and PATH in an adposition is possible in both French (21-23) and Japanese (24-26):

- (21) La fille a dansé *le long de* la rivière.
 ‘The girl danced along the river.’ (danced *along*)
- (22) La fille a dansé *autour de* l’arbre.
 ‘The girl danced around the tree.’ (danced *around*)
- (23) La fille a dansé *vers* le garçon.
 ‘The girl danced towards the boy.’ (danced *towards*)
- (24) Onna-no-ko wa kawa *ni sotte* odotta.
 ‘The girl danced along the river.’ (*along* danced)
- (25) Onna-no-ko wa ki *no mawari o* odotta.
 ‘The girl danced around the tree.’ (area *around* tree, danced)
- (26) Onna-no-ko wa otoko-no-ko *no ho e* odotta.
 ‘The girl danced towards the boy.’ (*towards* danced)

Two useful diagnostics may be employed to help determine the boundedness specification. Firstly, given appropriate felicity conditions, bounded PATH may combine with time adverbials such as ‘in three minutes’, but not ‘for three minutes’, whilst for unbounded PATH the reverse is true e.g. *She swam across the river {in thirty seconds / *for thirty seconds}*; *She swam towards the shore {for thirty seconds / *in thirty seconds}*. Secondly, if attainment of a boundary or endpoint is subsequently negated, sentences with bounded PATH are rendered false, whilst those with unbounded PATH remain true e.g. if she doesn’t reach the other side, *She swam across the river* is false; even if she doesn’t reach the shore *She swam towards the shore* remains true.

Certain problematic cases merit attention. Firstly, verb-framed languages do not permit the combination of MANNER verbs with the equivalent of English ‘to’, as expected, but they do allow a similar structure with the equivalent of ‘until’, as shown below in French (27-29) and Japanese (30-32).

- (27) *La fille a dansé *à* la gare.
 ‘The girl danced to the station.’ (*danced *to*)
- (28) La fille est *allée* à la gare en dansant.
 ‘The girl danced to the station.’ (*went...dancing*)
- (29) La fille a dansé *jusqu’* à la gare.
 ‘The girl danced to the station.’ (danced *until*)
- (30) *Onna-no-ko wa eki *ni* odotta.
 ‘The girl danced to the station.’ (**to* danced)
- (31) Onna-no-ko wa eki *ni* odotte *itta*.
 ‘The girl danced to the station.’ (dancing *went*)
- (32) Onna-no-ko wa eki *made* odotta.
 ‘The girl danced to the station.’ (*until* danced)

Secondly, several adpositions which might initially seem unbounded in fact allow both interpretations, as shown in the following English examples:

- (33) She danced around the tree {for three hours / in thirty seconds}.
- (34) She danced through the town {for three hours / in three hours}.
- (35) She danced along the beach {for thirty minutes / in thirty minutes}.

Thirdly, whilst French appears to typify Romance in respect of these lexicalization patterns, there are apparent counterexamples in Italian in which PATH may be expressed in the compound prepositions *su per* ('up') and *giù per* ('down') e.g.

- (36) La ragazza ballò *giù per* la collina.
'The girl danced down the hill.' (danced *down*)

I shall return to these cases in Section 5, but will first pursue the possibility of incorporating the semantic elements PATH and BOUNDARY into a formal syntactic framework.

3. Linguistic representation of PATH

Talmy's (1985, 1991, 2000) cognitive linguistic investigations have been wide-ranging, and have brought to light interesting data bearing on several aspects of event semantics including motion, agency, causation, valence and information structure. His findings have inspired research by linguists working in both functional and formal frameworks (as broadly defined in Newmeyer, 1999). However, an inconsistent use of terminology and questionable argumentation encumber his analysis of PATH predicates. The term 'satellite' is crucial in his framework, and is applied to all adpositions which express PATH. It is interchangeably described as a 'category', a 'surface constituent' and a 'grammatical relation' (Talmy, 1985). However, it is necessary to distinguish grammatical categories from relations and constituents: for example, the category 'noun' remains constant whether it be in a subject or object relation to the verb, and regardless of its status as a syntactic constituent. The most concrete definition of 'satellite' is found in Talmy (1991: 486): 'the grammatical category of any constituent other than a nominal complement that is in a sister relation to the verb root'. This is an attempt to determine categorial status by reference solely to the semantic *function* of diverse elements acting as secondary predicates, and subsumes some English prepositions (e.g. run *out*) and resultative adjectival predicates (e.g. come *loose*), as well as a range of verbal affixes in German, Latin, and Russian, and polysynthetic affixes in Atsugewi. Talmy (1991: 104-105) considers satellites to be categorially distinct from prepositions, so that in (37) *out* is a satellite, which with the verb forms a grammatical constituent, termed a 'verb complex', whilst *of* is a preposition.

- (37) She ran out of the house.

However, using formal syntactic criteria, distributional evidence shows that *out* does not form a constituent with the verb but is a real preposition, integral to the complex P *out of* and heading the PP constituent, which acts as a unit in syntax and may for example be clefted. Consider: *It was [out of the house] that she ran;* **It was [of the house] that she ran out.* This

is distinct from cases of semantically bleached P in phrasal verbs such as *run up*, which do form a unit with V. Compare: *She ran up a large {hill / bill}*; *It was [up a large hill] that she ran*; **It was [up a large bill] that she ran*. It is apparent that this ‘verb complex’ (verb *run* + satellite *out*) does not act as a syntactic unit, and is therefore not a ‘grammatical constituent’. Nevertheless, these uses of the terms ‘satellite’ and ‘verb complex’ have been widely adopted in cognitive semantic literature. I shall henceforth drop the term ‘satellite’, and for the purposes of this investigation refer to the dichotomy in question as between ‘V-type’ and ‘P-type’ languages, where V signifies ‘verb’, and P represents prepositions, postpositions, and incorporated prepositions.

An additional problem is the difficulty inherent in assessing the validity of interesting typological claims. Talmy (1985: 62) claims to have discovered an ‘apparently exhaustive’ three-way typology for the conflation of MOTION with other semantic elements in V: (i) PATH; (ii) MANNER; (iii) FIGURE. However, the third typological category is proposed on the basis of just one language, and no reference is made to the sample size or sources for languages (see Newmeyer, 1999: Ch.6, for discussion of these issues). The criteria of frequency and colloquial use to determine the ‘basic’ conflation pattern in a language is compromised by such complications, especially as a single language like English allows conflation in V of MOTION with PATH (e.g. *climb*), MANNER (e.g. *wriggle*), FIGURE (e.g. *rain*) and also GROUND (e.g. *screen the film*, *quarry the marble*, *crate the oranges*).

Cognitive semantic treatments of motion in language inspired by Talmy generally view the lexicalization of PATH as V or P as a question of speaker *choice* or cognitive *preference*. For example, Slobin (1996: 218) argues that speakers of Spanish, and by extension other V-type languages, are from childhood conditioned to develop ‘a particular rhetorical style’. However, perhaps the most relevant distinction between V-type and P-type languages for the present investigation is that their relationship is asymmetrical: P-type languages permit both options (though one is sometimes more marked), whilst V-type languages do not, as illustrated below in French (38) (*on PATH reading) and English (37). This asymmetry reveals that this not a question of cognitive preference for a given lexicalization pattern, but rather that there is a grammatical constraint at work in V-type languages.

- (38) *La fille a dansé *en bas de* la colline.
 ‘The girl danced down the hill.’ (danced down)
- (39) The girl went down the hill dancing.

An important point to note at this juncture is that the focus of this paper is on the crosslinguistic encoding of PATH, rather than the equally interesting role of inference in interpretation. In V-type languages the location is often explicitly described, leaving the path to be inferred. In an experiment reported in Slobin (1996), native speakers of Spanish and English in 5 age groups were asked to describe the adventures of a boy searching for his runaway frog, using a wordless children’s picture-story book. One interesting result is the extent to which in all age groups the English narratives encode paths in explicit descriptions, leaving locations to be inferred, whilst the Spanish narratives give more explicit descriptions of locations, leaving the paths to be inferred, e.g. *He starts running and he tips him off over a cliff into the water* (age 9, USA); *Los tiró a un precipicio donde había harta agua. Entonces se cayeron* (‘He threw them at a cliff where there was lots of water. Then they fell’) (age 7,

Chile). A further investigation reported in Slobin (1996) involved a stylistic analysis of literary texts and translations in Spanish and English, and the dichotomy between the encoding of path and location was reaffirmed in the original texts. However, the English translations almost always follow the Spanish quite literally, ‘and sometimes even add a bit’ (Slobin, 1996: 210), whilst the Spanish translators are forced to make changes to English trajectories, omitting manner and path segments. For example, ‘He strolled across the room to the door’ (Du Maurier, 1938: 329) is translated as *Se dirigió hasta la puerta* (‘He went to the door’). Slobin (1996) does not dwell on this, but it highlights the asymmetry between V-type and P-type languages and corroborates the contention that in V-type languages this is not simply a question of rhetorical predilection as Slobin maintains (1996: 217-218), but rather a grammatical constraint on the lexicalization of PATH.

Talmy’s (1985) insights into meaning-form mappings might be captured more economically by (i) a rigorous definition of individual elements to be combined; and (ii) formal incorporation of such elements into a combinatorial system (e.g. semantic structure, or generative syntax). However, there is considerable variation in the representation of event structure across and even within formal linguistic research programmes. I shall briefly contrast the frameworks of Jackendoff (1990), Pinker (1989) and Emonds (1991, 2000), who all work with the general assumptions of generative syntax and take a ‘lexicalist’ approach to argument structure, yet who differ in their views on the nature of lexical semantic representation and the relationship between language and thought.

One of the most influential formal approaches has been that of conceptual semantics, a well-articulated representational system developed over many years by Jackendoff (e.g. 1983, 1990, 1991, 1996). The general approach is exemplified below, where (40a) is a syntactic representation, and (40b) is a corresponding simplified conceptual structure, in the form of predicate-argument structure.

- (40) a. [IP [DP Satchmo] [VP [V went] [PP [P onto] [DP the stage]]]]
 b. [Event GO ([Thing SATCHMO], [Path TO ([Place ON ([Thing STAGE])]])]]

The conceptual structure in (40b) contains the elements THING, EVENT, PLACE, and PATH, which are examples of what Jackendoff terms ‘ontological categories’; they are basic concepts that support complex thought. Each interpretable syntactic constituent of a sentence maps into a conceptual constituent, although the reverse is not true, as some conceptual constituents may be contained within lexical items. Each ontological category may be decomposed into a function-argument structure, each argument being in turn a conceptual constituent of some major category. The conceptual structure above also contains ‘conceptual functions’. The event-function GO combines a THING and a PATH to form an EVENT. The path-function TO combines a PLACE and a THING to form a PATH.

Pinker’s (1989) semantic structures are an elaboration of Jackendoff’s conceptual structures, and indeed have a very similar character, especially in terms of their predicate-argument notation. Pinker retains the idea of the initial stating of predicates, followed by their arguments and sub-events, and keeps most of Jackendoff’s mnemonics, e.g. GO, BE, THING, PATH, PLACE, etc. The most important difference is perhaps that Pinker sees his semantic structures as a level of *linguistic* representation, which interfaces both with syntax and with non-linguistic conceptual representations. It contains only those conceptual elements that are relevant to syntax. Jackendoff, however, sees his conceptual structures as being outside the

language faculty proper. They *are* the level of conceptual representation, and contain elements that are not ‘visible’ to syntax (distinctions of colour, temperature etc.). An additional difference is that whilst Jackendoff maintains the need for syntactic selection of argument categories, Pinker (1989) collapses the selection of the categories, thematic roles and properties of possible arguments at a single level of representation. For arguments that property selection is conceptual rather than linguistic, and thus cannot be collapsed with other aspects of argument selection, see Stringer (2001).

Emonds (1991), *contra* Jackendoff (1990) and Pinker (1989), argues that ‘[there is no]...independent evidence that logical devices such as predicate argument structures or standard rules of inference have psychological reality’ (Emonds, 1991: 375). Moreover, he sees no need to build a separate combinatorial system out of elements such as MOTION, PATH, LOCATION etc. Why have two combinatorial systems (X-bar syntax and X-bar semantics), both extremely similar in structure and running in parallel, rather than attempt to incorporate such elements into syntax? Emonds argues that there is a single combinatorial system for language and thought: ‘the categories of syntax *are* the categories of connected thought’ (Emonds, 1991: 371). The only alternative, he argues, is that ‘in addition to an ability to name, human beings have two further *independent* mental faculties for combining names which set their expressive/communicative system apart from that of primates’ (Emonds, 1991: 370). He does not equate all thought with language, but claims that when thoughts are combined to create complex thoughts, they are combined through the combinatorial mechanism of syntax.

Emonds’ (1991, 2000) extension of Chomsky’s (1965) subcategorization theory into the domain of conceptual semantics constitutes a thorough reworking of lexical representational conventions, and has implications for a wide range of syntactic problems. A pivotal aspect of this approach is the reanalysis of lexical semantic components as syntactic features, subject to general principles of semantic interpretation. This may be illustrated with a summary inspection of the operation of the feature [\pm LOC] (location) in conjunction with the interpretive principle of ‘Ground Specification’ (Emonds, 1991: 397).

- (41) Ground specification: A direct object NP of a transitive Y^0 is a ground if and only if Y^0 is +LOCATION.

Y^0 is understood as either V^0 or P^0 . For example, the verb *fill* has the inherent feature [+LOC], and obligatorily selects a GROUND as direct object e.g. *The girl [filled +LOC] the glass with juice*; **The girl filled juice into the glass*. The verb *pour* is [-LOC], but selects a preposition which is [+LOC], which in turn selects a GROUND as direct object e.g. *The girl poured juice [into +LOC] the glass*; **The girl poured the glass with juice*. A verb and preposition in the same argument structure cannot both be [+LOC]. This principle is also seen in the behaviour of ‘alternating’ locative verbs. The verb *spray* is specified as [\pm LOC]. If *spray* is [+LOC], then the preposition is [-LOC] e.g. *The girl [sprayed +LOC] the table with juice*. If *spray* is [-LOC], then the preposition is [+LOC] e.g. *The girl sprayed juice [onto +LOC] the table*.

Emonds (1991: 385) argues that [+LOC] is a necessary condition for the occurrence of [\pm PATH]. The verb *dash* selects a preposition that is [+LOC, +PATH] e.g. *She dashed {through the trees / to the shops / *near the beach / *on the road}*; whilst the verb *place* selects a preposition that is [+LOC, -PATH] e.g. *She placed the chair {near the beach / on the*

*road / *through the trees / *to the shops*}. The specification [-LOC] is necessary in order to capture e.g. non-locative *of, about* (concerning), *for* (in place of), *despite* etc.

I adopt Emonds' (1991, 2000) analysis of PATH as a syntactic feature, but an accurate description of the data set out in Section 2 requires a more comprehensive account that subsumes the phenomenon of boundedness.

4. Linguistic representation of BOUNDARY

Within his framework of 'conceptual semantics', Jackendoff (1991) introduces a pair of formal conceptual features that are fundamental to his analysis of event structure and noun phrase semantics: [\pm b] (bounded), and [\pm i] (internal structure). In the nominal domain, they are used to cross-classify (i) individuals, [+b, -i] (e.g. a pig); (ii) groups, [+b, +i] (e.g. a committee); (iii) substances, [-b, -i] (e.g. water); and (iv) aggregates, [-b, +i] (e.g. buses). This discussion focuses on the feature [\pm b]. If we 'look inside' a [-b] event, and 'interrupt' it at some point, the description of the total process is also true of the part. Thus *The girl danced towards the station* is true at any given stage of her journey, even if she never gets there. A [+b] event such as *The girl danced to the station* is true only if the whole is completed. As Jackendoff (1991, 1996) has observed, this parallels the count-mass distinction and plurality effects in nouns. If we divide water (mass noun, [-b]) into parts, each part is in itself water. If we divide an apple (count noun, [+b]) into parts, each part is not itself an apple. If we divide the plural *apples* [-b] into parts, however, each part is an apple.

Jackendoff proposes that the plural morpheme expresses a conceptual function PL which maps its argument into an aggregate. This process is illustrated in the following examples, where 'Mat' signifies 'material entity':

$$(42) \begin{pmatrix} +b, -i \\ \text{Mat DOG} \end{pmatrix} = \text{a dog}$$

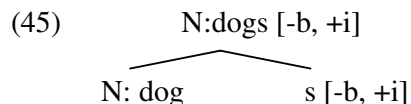
$$(43) \begin{pmatrix} -b, +i \\ \text{Mat PL} \left[\begin{pmatrix} +b, -i \\ \text{Mat DOG} \end{pmatrix} \right] \end{pmatrix} = \text{dogs}$$

(adapted from Jackendoff, 1991: 21)

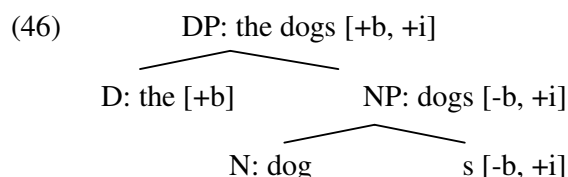
Jackendoff (1991: 20-21) interchangeably refers to the representation in (42) as representing both *dog* and *a dog*, but his avoidance of the conceptual representation of determiners renders this representation potentially misleading. Perhaps the boundedness interpretation in (42) is in fact due to the determiner, not the noun. In fact when *dog* is used in bare noun form in English, it is interpreted as [-b] e.g. *This butcher claims that dog is delicious; There was dog all over the road*. The boundedness specification may be compositionally derived if [+b] is analysed as a syntactic feature on the determiner, as shown below:

$$(44) \begin{array}{c} \text{DP: a dog [+b]} \\ \diagup \quad \diagdown \\ \text{D: a [+b]} \quad \text{dog} \end{array}$$

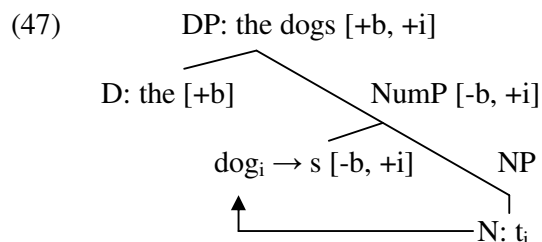
Initially assuming that pluralization is a case of lexical affixation, the most parsimonious representation is in terms of syntactic features [-b, +i] on the plural morpheme, which by conventional analysis percolate from the right-hand head (see Williams, 1981: 248):



If a determiner or numeral dominates the phrase in (45), the feature value is that of the highest head i.e. [+b]. As D is not specified for [\pm i], this feature percolates from the affix to the maximal projection, as shown below (for a formalization of this percolation convention see Holmberg, 1986: 60).



The same boundedness specification obtains whether pluralization is analyzed as lexical affixation as in (45) and (46), or as syntactic affixation whereby features of a higher functional head (e.g. ‘Number’) attract the head N (see Ritter, 1995: 408 - 409), as in (47). The feature [+b] is carried by the higher head D on either analysis.



I suggest that that N is [-b, -i] by default. The traditional distinction between count and mass nouns in English can be more parsimoniously described in terms of the [+b] feature carried on determiners and quantifiers and the [-b, +i] features carried on the plural affix. All bare N are [-b, -i] by default, both ‘count nouns’ e.g. *apple, dog*, and ‘mass nouns’ e.g. *cheese, wine*. All plural N with no D carry the features of the plural affix [-b, +i], e.g. *apples, dogs, cheeses, wines*. All N preceded by D are [+b], and if plural then [+i], e.g. *the apples, these dogs, the cheeses (of Normandy), the wines (of Burgundy)*.

Just as [\pm b] may be reanalysed as a syntactic feature in the nominal domain, so it may in the domain of predication, which renders plausible the hypothesis that constraints on the interaction of paths and boundaries in V-framed languages may be captured at a single level of syntactic representation.

5. Lexical realization of PATH: To [b] or not to [b]

The analysis of PATH and BOUNDARY as syntactic features facilitates a descriptive generalization of the lexicalization constraint at work in French and Japanese:

- (48) V-type languages obligatorily conflate [PATH, +b] with MOTION in V.

This lexical principle appears to hold despite the potential problems raised in Section 2, which I shall now examine in turn. Firstly, the *until* problem. Crosslinguistically, *until* always has a temporal reading, but in V-framed languages it may also be metaphorically extended into the spatial field. In P-framed languages, the metaphorical extension of *until* into the spatial field is impossible. Compare its behaviour in French and Japanese (27-32) with the English examples below:

- (49) The girl swam until three o'clock.
(50) The girl swam {to / *until} the island.

That *until* is ungrammatical in these contexts in English is unsurprising, as there is a lexical equivalent in the spatial field: *as far as*. The problem is this use of *until* in V-type languages, as it seems to be a case of P [PATH, +b]. I maintain that whilst most bounded prepositions are fundamentally spatial, *until* is fundamentally temporal, and places a boundary not on the path but on the duration of the activity. As *until* expresses a temporal rather than a spatial boundary, it does not counterexemplify the descriptive generalization. This argument is conceptual rather than empirical, as evidence is thin on the ground. One possible prediction would be that if there were a predicate in French that expressed a path through space but not time, then it should not be able to enter into combination with *jusqu'à* ('until') However, PATH verbs seem always to permit the conceptualization of motion through time as well as space, even with the shortest trajectories, given appropriate felicity conditions.

Secondly, there is the problem of variable interpretation. On the account of boundedness as a syntactic feature, predicates such as English *around*, *through* and *along* may be specified as [\pm b], accounting for the variation seen in examples (33-35). As boundedness is lexically specified, some crosslinguistic variation is to be expected. In French, the verb *faire le tour* ('go around') is always [+b]; it means 'go once completely around', and supports the time adverbial *en trente secondes* ('in thirty seconds'), whilst the preposition *autour de* ('around') is [-b], can be used whether or not the circle is completed, and no matter how many times one goes round, and does not support the same adverbial:

- (51) La fille a *fait le tour de* l'arbre en dansant.
'The girl danced around the tree.' [+b] (went-around...dancing)
(52) La fille a dansé *autour de* l'arbre.
'The girl danced around the tree.' [-b] (danced around)

By the same criteria, the Japanese verb *mawaru* ('go around') is [\pm b] both in its sense of 'move in a circular path around the outside of something' (53), and in the sense of 'move around within a location' (54). In the latter example, the [+b] reading means 'went

throughout', 'went all through', and takes a delimiting time adverbial, whilst the [-b] reading means something like 'went here and there' and only permits a durative time adverbial.

- (53) Onna-no-ko wa ki no mawari o odotte *mawatta*.
 'The girl danced around the tree.' [±b] (dancing *went-around*)
- (54) Onna-no-ko wa machi o odotte *mawatta*.
 'The girl danced {around / through} the town.' [±b] (dancing *went-around*)

The [+b] and [-b] readings in (54) would receive different translations in French, with the verb *parcourir* ('go around / through / across') which is specified as [+b], and allows a delimiting time adverbial; and the preposition *par* ('around / through'), which is specified as [-b], and only permits a durative time adverbial:

- (55) Elle a *parcouru* la ville en dansant.
 'She danced {around / through} the town.' [+b] (*went-around...dancing*)
- (56) Elle a dansé *par* la ville.
 'She danced {around / through} the town.' [-b] (danced *around*)

This kind of variation provides compelling evidence that boundedness is lexically specified, and may be represented as a syntactic feature.

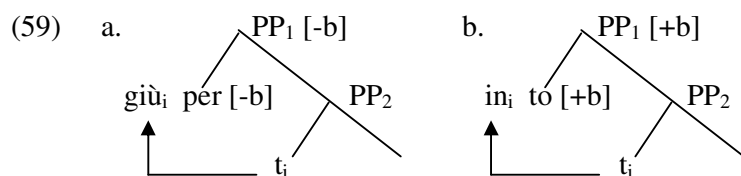
The third problem is the apparent counterexamples of *su per* ('up') and *giù per* ('down') in Italian. Example (36), *La ragazza ballò giù per la collina* ('The girl danced down the hill'), seems to violate the descriptive generalization for Romance. The solution lies in the fact that the interpretation is in fact that of an *unbounded* PATH. The sentence is true even if the girl does not arrive at the bottom of the hill, and *giù per* ('down') permits only a durative time adverbial:

- (57) La ragazza ballò giù per la collina {per 3 minuti / *in 3 minuti}
 'The girl danced down the hill {for 3 minutes / *in 3 minutes}'

The PATH is thus 'in a downwards direction', rather than 'down to the bottom'. The boundedness specification of this complex preposition appears to be determined by *per* ('around / through / along'), which is independently specified as [-b], as in: *La ragazza ballò per le strade* ('The girl danced through the streets'). If *giù per* is analyzed as a compound preposition, then the right-hand head rule applies, in the manner of the English unbounded P *towards* (also intransitive *downwards*, *skywards*, etc.):

- (58) a. $\begin{array}{c} \text{giù per [-b]} \\ \diagdown \quad \diagup \\ \text{giù} \quad \text{per [-b]} \end{array}$ b. $\begin{array}{c} \text{towards [-b]} \\ \diagdown \quad \diagup \\ \text{to} \quad \text{wards [-b]} \end{array}$

If alternatively *giù per* involves syntactic movement of *giù* to a higher head *per*, then the boundedness feature is determined by the higher head, in a process possibly mirrored by the English bounded P *into*:



On either account, it seems clear that *per* determines the [-b] specification of the complex P, and that *giù per* does not counterexemplify the descriptive generalization concerning V-type languages. The examples of bounded and unbounded PATHS discussed in this section provide further support for the analysis of [±b] as a syntactic feature, and for the application of this feature in the domain of predication.

6. Concluding remarks

I posit the following tentative conclusions: Firstly, PATH is a syntactic feature inherent to primary and secondary predicates, universally encoded in closed-class or semi-lexical items (adpositions and ‘basic motion verbs’ such as *go-up*, *go-down*, *cross*, etc.). Secondly, PATH predicates carry the feature [±BOUNDARY], or [±b], a cross-functional element with applications throughout syntax. Thirdly, there is a lexical principle at work in V-type languages to the effect that [PATH, +b] obligatorily conflates with MOTION in V. Exactly how boundedness interpretation is affected by the assortment of ways in which lexical items and phrases interact in syntax requires investigation beyond the scope of this paper. However, the analysis of PATH and BOUNDARY as syntactic features provides a formal basis for further research into the linguistic representation of motion through space.

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