

Translocation, language and the categorization of experience

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1 Introduction

The phenomenon of *motion* is prevalent in experience: the rising and falling of our chests in breathing, the tapping of our feet against the floor, the flying of birds, the ripples of water in the brook. *Panta rei*. But all instances of (perceived) motion are not of the same kind. In the case of the rising chest, the tapping foot and the rippling water we do *not* experience any change of location of the moving object. On the other hand, in following by gaze the flight of birds, or perhaps a boat floating down the river, we do experience such a change of location. At the same time, there is a difference in the latter two cases: birds fly through perceived self-motion, while the boat is being moved by the flow of the river, or possibly by people rowing it...

The goal of this chapter is twofold. The first is to provide an experientially-based classification of *motion situations*. We believe that the one we offer in Section 3 is more systematic than the various distinctions made in the current literature on ‘motion events’ (e.g. Talmy 2000, Slobin 2003, Pourcel 2005, cf. Section 2). Notice also that by emphasizing *experience*, rather than the objective *fact* of motion, we adopt a phenomenological perspective situating motion in the *lifeworld* of the human subject (Husserl 1999 [1907]), rather than in ‘objective reality’. This is consistent with the assumption, often emphasized by cognitive linguists nowadays (e.g. Lakoff 1987), but with roots in antiquity (cf. Itkonen 1991), that language refers to and classifies not reality in itself – but *reality as conceived by human beings*. This brings us naturally to the second goal of the chapter: to use the proposed taxonomy of motion situations in addressing the questions of how different languages express motion, and if linguistic differences imply differences in conceptualization. Such (neo-)Whorfian questions have been explored extensively in the literature in recent years (see Pourcel 2005 and Section 4 below for a review), but unless we can define the classes of motion experiences *independently* of language, we are left without a compass in addressing the issues of linguistic relativity. Indeed, one finds an acknowledgment of the need for a language-independent characterization of experience in the writings of the father of the ‘principle of linguistic relativity’ himself, Benjamin Lee Whorf:

To compare ways in which different languages differently ‘segment’ the same situation of experience, it is desirable to analyze or ‘segment’ the experience first in a way independent of any language or linguistic stock, a way which will be same for all observers. (Whorf 1956: 162)

After reviewing some of the neo-Whorfian research on motion in Section 4, we ask in Section 5 whether the different ways in which French, Swedish and Thai speakers express motion situations imply conceptual and experiential differences in tasks involving the categorization of

translocation. Describing a series of experimental studies using the *Event Triads* elicitation tool (Bohnenmeyer, Eisenbeiss and Naranhimsan 2001), and an extension of it (Blomberg 2006, 2007) we show that the answer to this question appears to be not unambiguous. To anticipate, our empirical findings suggest that the categorization of motion situations can be either more *direct* – and thus relatively unaffected by language – or more *mediated* (Vygotsky 1978), and that language can play a considerable role at least in the second case. As we discuss in Section 6, the change of emphasis from linguistic relativity to linguistic mediation can help interpret not only our own results, but also some of the contradictory findings reported in the recent literature.

2 Motion and ‘motion-event typology’

If an essential aspect of motion is the perception of physical instability (Durst-Andersen 1992: 53) then what exactly is a ‘motion event’, given that this has been the dominant term in the relevant literature during the past decades? Talmy offers the following answer: ‘A Motion event [...] is a situation containing *motion* or the continuation of *stationary location*.’ (Talmy 2000: 162, our emphasis). But whatever advantages this may have in terms of capturing commonalities across static and dynamic locative predication, it is much too general for our purposes by glossing over the major experiential division: spatial change vs. stasis.

Talmy (1985, 2000) considers the ‘presence of motion’, or *motion* with a small letter, along with the conceptual components *figure*, *ground*, *path* and *manner/cause* to be building blocks of a ‘motion event’, and depending on the way they are mapped to different constituents in the clause, formulates the basis for his well-known motion-event typology, shown schematically in Figure X.1, with example sentences from English (a satellite-framed, or S-language) and French (a verb-framed, or V-language). This typology has been claimed to be exhaustive, i.e. that every one of the world’s languages can be categorized as being, predominantly, an S- or a V-language.

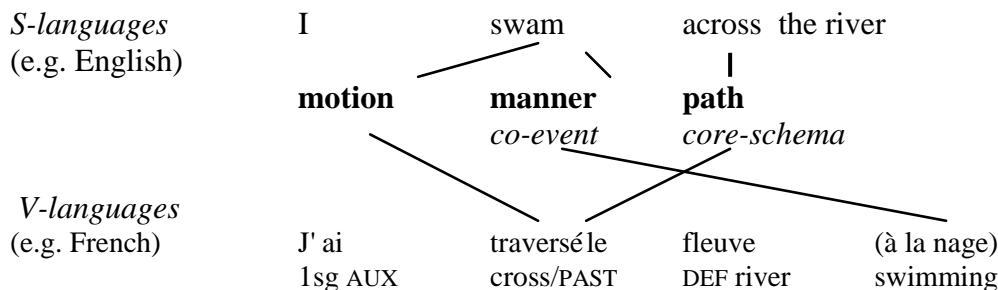


Figure 1. Different mapping patterns between the conceptual components of motion events and parts-of-speech in satellite-framed (S) languages and verb-framed (V) languages

However, it has become increasingly clear that this binary typology cannot do justice to the complexity found in the world’s languages: either more ‘exotic’ ones such as Tzeltal (cf. Brown 2004), or more familiar ones such as Russian (cf. Smith 2003), as many of the contributions to the volume edited by Strömquist and Verhoeven (2004), e.g. Slobin (2004) testify. In some of our own work (Zlatev and David 2003; Zlatev and Yangklang 2004), we have documented how Thai, and by extension other similar serial verb languages, constitute a distinct ‘third’ type. For

example, Thai resembles V-languages in some respects (e.g. path expression by a main verb), S-languages in other respects (e.g. manner expression by a main verb), while in yet other respects it resembles neither (e.g. by having a separate ‘slot’ in the serial verb construction for path+manner conflating verbs), cf. Zlatev and David (2003) for discussion.

But perhaps more troublesome for the Talmian typology than the empirical problems are certain unresolved conceptual and definitional issues, such as the following:

- What exactly is ‘path’? The extended trajectory traversed by the moving entity, or some sort of schematic representation of this, e.g. as in the model of Regier (1996), related to the beginning, middle and/or end of the motion trajectory?¹ And how does this relate to the concept of *direction* of motion, expressed in e.g. *up*?
- What exactly is ‘manner’ (of motion)? Does this include information pertaining to the vehicle of motion (e.g. fly vs. ride), the speed (e.g. stroll vs. run), the body parts (e.g. hop vs. climb), the medium (sink vs. fall) or all of these?
- Why is path regarded as the ‘core schema’, and is this so for all languages and for all types of motion (for this and the following point, see the discussion below)?
- What is a ‘co-event’? Is it really an *event* and does it always pertain to information related to the ‘manner’ or ‘cause’ of motion?
- What exactly is a ‘satellite’? Talmy (2000: 102) defines it as a constituent standing in a ‘sister relation to the verb root’, but it is, for example, unclear if Swedish verbal particles (e.g. *gå in*) can be thus grouped with Bulgarian verb-prefixes (e.g. *v-liza*): while both examples correspond to English ‘go in’, and the ‘satellite’ carries the meaning INTERIOR, the Bulgarian stem does not exist as an independent verb.

The basic, and yet unresolved, question however, remains ‘What is motion?’ and correspondingly: ‘What is a motion event?’ Prior to a clear answer to these questions, it is not certain that we are comparing equivalent semantic structures across languages. Talmy is clearly aware that his initial definition of a ‘Motion event’ needs further specification, since he repeatedly points out the difference between *translational motion*: ‘an object’s basic location shifts from one point to another in space’ and *self-contained motion*, where “an object keeps its basic or ‘average’ location” (Talmy 2000: 35) and emphasizes that the typology concerns motion only of the first kind. However, it is not altogether clear what this distinction amounts to and what is meant by ‘basic location’. As examples (1) show, it is not possible to decide on the basis of the semantics of the verb alone what type of motion is involved: in (1a) John’s motion is clearly ‘self-contained’ while in (1c) John’s location has ‘shifted’ from outside to inside the room. But what about (1b): is the motion involved considerable enough to be ‘translational’?

- (1) (a) *John ran on the treadmill.*
(b) *John ran in the park.*
(c) *John ran into the room.*

In a recent monograph, Pourcel (2005) endeavors to clarify these issues through an ‘alternative model’, that is claimed to be based on *conceptual analysis*, rather than semantic analysis, as is the case with Talmy, or discourse analysis as done by Slobin (e.g. 1996, 1997, 2003). The core of

Pourcel's proposal seems to be to distinguish between *motion events* and *motion activities*, illustrating these with examples (2) and (3) – with identical numbers in (Pourcel 2005: 153--154):

- (2) *The dog ran out of the barn across the field to the house.*
- (3) *The dog is running around the house.*

On this basis, it is argued that:

[t]here is therefore a distinction between motion that is source-and-goal-oriented, as in (2), and motion that is not, as in (3). Conceptually, it is relevant to distinguish between motion event and motion activity as the conceptual emphasis of an event consists of the PATH of motion...; whereas the conceptual emphasis of an activity consists of the MANNER of motion, which specifies a motion in progress, e.g. (3). In other words, the core schema of activity is no longer PATH, but MANNER. (Pourcel 2005: 154)

In general, this proposal is quite reasonable. But if indeed the 'core schema' in activity representations is MANNER rather than PATH, this goes clearly against Talmy's terminology, where Path is always the core schema, irrespective of language and construction type, which brings us back to one of the conceptual/definitional problems listed earlier. Still more troublesome is that Pourcel (2005) does not provide any clear *conceptual* criterion for what distinguishes 'events' from 'activities' that would explain the corresponding focus on Path vs. Manner. The qualification 'specifies a motion in progress' for activities can hardly be correct since it is based on the progressive aspect marking of (3), while (1a) and (arguably) (1b) are representations of 'activities', even though they are not presented as being 'in progress'.

Furthermore, the concept of 'motion event' is extended by Pourcel (2005) to involve not only 'telic paths', such as those on (2), but 'atelic' or 'locative' paths, 'e.g. DOWN, ALONG, AROUND' (Pourcel 2005: 154), illustrated in the English example (4) and the French examples (5) and (6):²

- (4) *The dog ran up the street.*
- (5) *Marc monte les escaliers sur la pointe des pieds.*
Marc goes up the stairs on tiptoes.
- (6) *Marc longe les bords de la rivière.*
Marc goes along the river bank.

What are the grounds for grouping these as examples of 'events' along with (2) rather than as activities along with (3), which, note, even includes the so-called AROUND path? We believe that the reasons are twofold. First, a language-independent conceptual analysis is not provided, but rather one which is influenced by the 'grammatical features of motion event encoding in French' such as that 'PATH information is obligatory ... in the main verb' (Pourcel 2005: 180), along with *a priori* classification of verbs such as *monter* and *longer* as PATH verbs (albeit 'atelic'). The second is that, as mentioned earlier, Pourcel (2005) seems to conflate lexical (i.e. *Aktionsarten*) and morphological (i.e. grammatical aspect) representations of the event/activity distinction – for example in referring to 'the variable use of the tenses, e.g. the imperfect or present tense for activities, and the past perfect or simple past ... for *completed motion events*' (Pourcel 2005: 181, our emphasis). In the next section, we will propose our own conceptual analysis of *motion situations* – a term used occasionally by Pourcel (2005: 186) as well, as a

hyperonym for motion events and activities – which we believe does not suffer from these problems. At the same time, we wish to express our indebtedness to Pourcel (2005) for helping bring together the ‘motion’ and the ‘situation type’ literatures, something which has been long overdue.

3 A taxonomy of motion situations

From the perspective of the analysis of (the invariants of) experience – *phenomenology* (cf. Husserl 1909), motion as such can be defined as the experience of *continuous change in the relative position of an object (the figure) against a background*, in contrast to stasis – where there is no such change – and in contrast to a *dis-continuous* change, as when a light suddenly lights up in position A, ‘disappears’ and then appears in position B. As well-known, however, if the time fragment between the two discrete events is small enough then an observer will actually see the light as *moving* from A to B, in a continuous manner. Thus, motion is ‘in the eyes of the beholder’. Note that ‘continuous’ is here meant to exclude from the definition of motion such events as disappearing at one place, and reappearing at another, as in a Star Trek case of ‘teleportation’, which may be in the sphere of the imaginable, but not in the ordinary human lifeworld. It does *not* exclude instances of rather abrupt types of motion, e.g. jumping, blinking, breaking or other similar ‘punctual’ events.

Furthermore, note that motion ‘from A to B’, i.e. *relocation* (Smith 2003) is not a necessary characteristic of a motion situation. First, the light could waver around A, and then there would be no change in its average position and thus there would be ‘self-contained’ motion in Talmy’s terms. Second, the figure could be moving along a vector in an open-ended way, for all eternity perhaps – and hence there need not be any B to relocate to. Third, the figure’s motion can be either spontaneous or caused by an external source. Thus, we have *three different parameters* according to which motion situations can vary, quite independent of their representation in language. These are described in the rest of this section, concluding with a summary presentation of the taxonomy, and its (perceived) advantages compared with those of Talmy or Pourcel.

3.1 Translocative vs. non-translocative motion

We define *translocation*, which is similar to but more transparent than Talmy’s term ‘translational motion’ (cf. Zlatev and Yangklang 2004) as *the continuous change of an object’s average position according to a spatial frame of reference*. As can be seen from this definition, this is a special kind of motion, which unlike motion in general requires a spatial frame of reference (FoR):

In the most general sense, a FoR defines one or more reference points, and possibly also a coordinate system of axes and angles. Depending on the types of the reference points and coordinates different types of FoR can be defined. (Zlatev 2005: 5)

An influential treatment of the concept FoR, especially within linguistic typology, is that of Levinson (1996, 2003), who distinguishes between *relative*, *absolute* and *intrinsic* FoRs. However, this distinction is only based on horizontal static relations, whereas Zlatev (2005, in press) extends and generalizes it to involve dynamic relations, i.e. motion, as well as the vertical plane. The first type can be called *Viewpoint-centered*, which when expressed in language involves the perspective of the speaker or hearer as a reference point, as in examples (7--8).

- (7) *I turned and went to the right.* **FoR:** Viewpoint-centered, Speaker
 (8) *Turn and go to the/your right.* **FoR:** Viewpoint-centered, Hearer

The second type is *Geocentric*, involving the horizontal or vertical plan while relying on geo-cardinal positions as reference points, as in (9--10).

- (9) *I drove West.* **FoR:** Geocentric, Horizontal
 (10) *The balloon went up.* **FoR:** Geocentric, Vertical

Finally, there is the *Object-centered* FoR, which can involve the position of either the focused (and possibly moving) object, the *figure*, or that of an external object, a *landmark*, as in (11--12).³

- (11) *I went forward.* **FoR:** Object-centered, Figure
 (12) *I went to the church.* **FoR:** Object-centered, Landmark

A particular case of translocation can thus be specified according to one or more of these frames of reference, which provide the reference points allowing us (a) to judge that the object/figure has indeed changed its average position and (b) to determine its Path or Direction (see below). Similarly, in order to state that there is no change in the *average* position of a moving figure, i.e. non-translocative motion, a FoR needs to be (at least) presupposed. John's running in example (1b) is non-translocative with respect to an Object-centered FoR with the park as a whole as Landmark. But the same state-of-affairs can be construed as translocative if we, for example, adopt some more specific reference point, e.g. the viewpoint of an observer situated within the park.

On this basis, example (1c) can be classified as an expression of translocative motion, while (1a) and (1b) represent non-translocative motion. The FoRs in all three cases are object-centred, anchored in, respectively, the referents of 'the room', 'the treadmill', and 'the park'. Note how essential the choice of a particular FoR is in order to determine the type of motion. If the same external state-of-affairs described in (1b) was portrayed as (13), then the (conceptualized) situation would be translocative, involving the change of the figure's position with respect to the 'end of the park'.

- (13) *John ran to the end of the park and back.*

Analogously, the same state-of-affairs can be experienced – and described – quite differently, depending on the Frame of reference, as in the examples below.

- (14) *He is going to the top of the hill.* Object-centered, Landmark
 (15) *He is going forward.* Object-centered, Figure
 (16) *He is going uphill.* Geocentric
 (17) *He is going that way.* Viewpoint-centered

While all four examples involve translocation, (15--17) do not specify the change of position in relation to a beginning (Source), middle (Via) or end (Goal) point, but rather with respect to the

figure's initial position in (15), geo-centric coordinates in (16) or a deictic center in (17). Thus following the analysis presented in earlier work (Zlatev 2003, 2005), we state that of these examples only (14) involves the category Path, understood in the schematic sense (cf. footnote 1), while (15--17) express the related but different category Direction. In the case of non-translocative motion there is neither Path nor Direction, since there is no change in the figure's average position. The crucial difference is that Path implies *bounded motion*, whereas Direction implies *unbounded motion*, which brings us to the next parameter.

3.2 Bounded vs. unbounded motion

The *boundedness* of a process undergone by X implies that it will inevitably (not just possibly or probably) lead to *X undergoing a state-transition* (cf. Vendler 1967). This means that in expressions of bounded motion, X (the figure) will depart from Source, or pass through a mid-point (Via), or reach a Goal (as in 12--14) – or all three as in (2). In *unbounded motion*, nothing of the sort is implied, and in principle – though not practically – the motion can go on indefinitely, as in the situations described in examples (7--11). As pointed out above, bounded translocative motion always involves the category Path, with one or more reference points being defined through the object-centred, landmark-defined FoR. In the case of unbounded translocative motion, we have rather the category Direction, specified either as a *vector* according to one of the other FoR conditions, or as a *trajectory*, that can take particular shapes such as AROUND or ALONG, as in (3) and (4).

Note furthermore, that there is independence between the two parameters discussed so far. We have seen how translocative situations can be either unbounded, e.g. (7--11) or bounded e.g. (12) and (13). Non-translocative situations can be similarly either unbounded, as (1a) and (1b), or bounded – if the motion involved leads to a state-transition, as in (18) or the Swedish equivalent (19).

(18) *The vase broke (in pieces).*

(19) *Vas-en gick sönder.*
vase-DEF go-PAST broken

One might counter that (18) and (19) do not express, but rather presuppose motion, but since the 'breaking' of the vase will typically involve a perception of physical change (against a stable background) we consider these sentences representations of non-translocative bounded motion.

3.3 Self-motion vs. caused motion

The final parameter concerns whether the figure is perceived to be moving under the influence of an external cause or not. As previously stated, the relevant notion of causality concerns the (naïve) human lifeworld, and not our scientific understanding of the universe. Thus, the situation described in (20) above is one of 'self-motion' even though the motion of the raindrops is caused by gravity, objectively speaking. On the other hand, (21) clearly represents a (translocative, bounded) caused motion situation.

(20) *Raindrops are falling on my head.*

(21) *John kicked the ball over the fence.*

This parameter is likewise independent of the other two, so it is possible to have, e.g. caused translocative, non-bounded motion situations (22), caused non-translocative bounded ones (23), and caused non-translocative non-bounded ones (24). The self-caused correspondences to these have already been illustrated.

(22) *He pushed the car forward.*

(23) *He tore the paper up.*

(24) *She waved the flag.*

3.4 Summary

The independence of the three parameters yields the 8 types of motions situations illustrated in Table 1, with schematic representations in English.

Table 1. Illustration of the expression of 8 motion situation types in English; F = Figure, LM = Landmark, A = Agent, View-C = Viewpoint centred, Geo-C = Geocentric, Obj-C = Object centred Frame of Reference

	-CAUSED	+CAUSED
+TRANSLOCATIVE +BOUNDED	F goes to LM	A throws F into LM
+TRANSLOCATIVE -BOUNDED	F goes away (View-C) F goes up (Geo-C) F rolls forward (Obj-C)	A takes F away (View-C) A pushes F upward (Geo-C) A pushes F forward (Obj-C)
-TRANSLOCATIVE +BOUNDED	F breaks (up/down)	A breaks F (up/down)
-TRANSLOCATIVE -BOUNDED	F waves	A waves F

The tense in the examples in Table 1, the present simple, is only seldom used with any of these situation types (constructions) in English, and if so to express habitual meanings, as in (25).

(25) *Marry goes to school at 8 o'clock in the morning.*

However, it was intentionally used in the cells in Table 1 in order to highlight the fact that the different situation types (i.e. specifying the values of the three parameters) can be expressed through: (a) the lexical semantics of the verb, (b) verb-satellite (particles or affixes), (c) adpositional phrases and (d) the grammatical construction (e.g. intransitive vs. transitive). While tense and aspect markers can make the distinction between e.g. bounded and non-bounded situations even clearer, i.e. by rendering the bounded ones in past simple as in (21), and the unbounded ones in present continuous as in (15--17), this is not *necessary* for making the parameter differentiations, at least for English. In fact, we broadly agree with Durst-Andersen (1992) that morphological aspect introduces *an extra dimension of meaning* over and above those expressed by (a)--(d), by allowing the profiling of situations either as *ongoing* or as *completed* – whether they are inherently bounded or not. Thus, (20) is no less a representation of a bounded situation (despite ongoing), and (22) no less a representation of a non-bounded one (despite being ‘in the past’ and thus completed). The following three ‘authentic’ examples, taken from the

British National Corpus (<http://www.natcorp.ox.ac.uk/>), show how *fall* in the past tense can be used to express non-bounded translocation, despite the fact that the events are being represented as taking place in the past, and thus as ‘completed’. Grammatical tense-aspect should therefore be distinguished from motion situation types, and their linguistic expression, *pace* Pourcel (2005).

- (26) *She called to Hermione and Joanna and all the girls who had gone already along the paths she had rejected, called to them to wait for her and place their steady walking boots on solid earth to catch her. And still she fell and fell.*
- (27) *The wind blew and the snow fell, but it didn't matter.*
- (28) *... in some cases, the devaluation of stock as component prices fell.*

The conceptual framework described in this section and in particular the contrast between bounded and non-bounded translocative situations is highly relevant for our empirical studies involving language and translocation described in Section 5. But prior to describing these, let us first take stock.

We claim that our proposed taxonomy clarifies some of the problematic issues described earlier. First of all, we believe that we have introduced definitions of motion in general, and specific types of motion situations that are more consistent than those used in (much of) the ‘motion events’ literature. Second, we consider our taxonomy to be, if not exhaustive, at least better equipped than alternatives to serve as a basis for typological investigations in the ‘domain’ of motion. It allows us to analyse e.g. cases such as those that were discussed in Section 2 in an unambiguous way. Thus, examples (4)–(6) can be classified as expressions of *translocative non-bounded* motion situations, together with (3), while (1c) and (2) are representations of *translocative bounded* ones. On the other hand, (1a) and (1b) are neither, but rather expressions of *non-translocative non-bounded* motion. This is summarized in Table 2. As pointed out in Section 2, examples such as these have been grouped and termed in various ways in the past.

Table 2. A classification of the examples discussed in Section 2, on the basis of the presented taxonomy of motion situations.

Examples from Section 2	Motion situation type
(3) <i>The dog is running around the house.</i> (4) <i>The dog ran up the street.</i> (5) <i>Marc monte les escaliers sur la pointe des pieds.</i> (6) <i>Marc longe les bords de la rivière</i>	+ translocative - bounded
(1c) <i>John ran into the room.</i> (2) <i>The dog ran out of the barn across the field to the house.</i>	+ translocative + bounded
(1a) <i>John ran on the treadmill.</i> (1b) <i>John ran in the park.</i>	- translocative - bounded

Third, we have defined Path as always related to Source, Via or Goal (on the basis of an Object-centered, Landmark-defined FoR), while non-bounded translocative situations involve Direction, and non-translocative situations involve Location. In this way, we have sharpened the conceptual apparatus used in the field. One thing this allows us is to reformulate the famous *boundary-crossing constraint* (Slobin and Hoiting 1994), stating that a motion verb expressing manner may not be used if there is a crossing of a boundary, as follows: *a Manner-verb can co-occur with an expression of Direction or Location, but not with Path in the same clause.* Assuming that French,

as most V-languages, generally obeys this constraint, examples (29--32), where the first two are from Pourcel (2005: 40a-41a), and the latter two from Zlatev and David (2003: 40b-c) can be straightforwardly explained as follows.

- (29) *Nous avons marché le long de la plage.*
 We walked along the beach
 MANNER DIR
 ‘We walked along the beach.’
- (30) *Nous avons marché dans la pièce.*
 We walked in the room
 MANNER LOC/*PATH
 ‘We walked inside the room.’
 * ‘We walked into the room.’
- (31) **Il a couru en entrant dans la maison.*
 3sg+MASC run+PAST entering in DEF house
 MANNER PATH LOC
 ‘He ran entering the house.’
- (32) *Il a couru pour entrer dans la maison.*
 3sg+MASC run+PAST to enter in DEF house
 MANNER PATH
 ‘He ran in order to enter the house.’

Example (29) does not violate the constraint, since it includes a combination of Manner and Direction within the clause. In (30), only a non-translocative interpretation of walking about ‘inside’ the house is possible. Such an interpretation is excluded in (31) due to the participle *entrant*, expressing Path, and the result is ungrammaticality (uncorrectness), due to semantic factors. Finally, (32) is in contrast a correct French sentence, since the Manner and Path expressions are in separate clauses.

The reformulated boundary crossing constraint will play a role in the interpretation of the results from our experiments, described in Section 5. But prior to that, we briefly review some of the recent research on how different languages can possibly affect the experience of motion in a way that ‘colours’ it accordingly.

4 Neo-Whorfian research on the categorization of translocation

If Talmy made ‘motion events’, or as we prefer – translocative situations – into a popular subject for typology, it was Slobin (1996) who brought the subject to the attention of neo-Whorfian research on linguistic relativity. According to one of Slobin’s formulations, it may even be a mistake to look for language-independent taxonomies of situations such as that presented in the previous section, since:

The world does not present ‘events’ and ‘situations’ to be encoded in language. Rather, experiences are filtered through language into verbalized events. A ‘verbalized event’ is constructed online, in the process of speaking. (Slobin 1996: 75)

But at the same time, Slobin’s famous ‘dynamic’ formulation of the Whorfian program, known as *thinking for speaking*, only concerns the ‘special kind of thinking [...] that is carried out, on-line, in the process of speaking’ (Slobin 1996: 75) and is therefore different from Whorf’s (1956) notion of ‘habitual thought’, according to which language should have much more pervasive effects (cf. Blomberg 2007). Methodologically, Slobin (1996, 1997, 2003) concentrated on differences in the ‘rhetorical style’ of speakers of V-languages such as Spanish and S-languages such as English – as something that could be explained by the languages’ different ways of expressing, above all, the concepts Path and Manner. For example, due to the optional expression of Manner in V-languages (see Figure X.1), their speakers were found to express Manner less often and preferred to give more static descriptions in which the Figure’s motion could be inferred from the ‘scene setting’ and the result of the motion, while S-languages induced descriptions in which the events were presented more dynamically, with more elaborated representations of the Path. But, as pointed out by Pourcel (2005), Slobin’s research gives little support for strong relativistic effects in *the categorization of experience as such*, i.e. even when ‘thinking for speaking’ is (apparently) not involved.

A number of other studies have attempted to demonstrate such effects using, among other methods, a classic task for studying categorization in an (apparently) non-linguistic context: *forced-choice similarity judgments*. The general method, used with various modifications, in all of these studies is to use *triads* of representations of motion situations: a target situation is presented along with two alternatives, where one differs from the target with respect to Path and the other with respect to Manner, and the subject is asked which of the two ‘is most similar’ to the target. The general reasoning is that if language impinges on categorization, then speakers of a V-language should be predisposed to prefer ‘same-Path’ rather than ‘same-Manner’ to a greater extent than speakers of S-languages, where both components are expressed equally easy (see Section 2). An exception to this line of reasoning was offered by Papafragou, Masely and Gleitman (2002), who suggested an alternative basis for a linguistic effect that actually runs in the opposite direction: since Manner is often expressed in a non-obligatory constituent in a V-language, when it is expressed, it would be ‘foregrounded’ and thus achieve more *semantic salience* (Talmy 1985) than in an S-language where it is expressed by an obligatory constituent, such as the main verb. Papafragou, Masely and Gleitman (2002) compared among other things the categorization of triads (using static pictures) by speakers of Greek (assumed to be a V-language) and English (an S-language) and despite differences in the linguistic descriptions that followed the predicted patterns (along the lines of Slobin’s research), they found no bias for either Path or Manner-based judgments in either group, and thus argued against the presence of any Whorfian effect on motion event categorization.

However, other studies applying the same method, but using triads of dynamic (video-clip) representations have given different results. Finkbeiner, Greth, Nicol and Nakamura (2002) compared English (S-language) with Spanish and Japanese (V-languages) speakers’ performance, and found a considerably stronger preference for Manner-based similarity in the English group, and thus support for a degree of linguistic relativity. Importantly, this effect was present only when the target clip was presented first, and the alternatives (in parallel) afterwards. When the

three clips were presented simultaneously, the Manner-bias for the English group disappeared, leading the authors to conclude that ‘the apparently nonlinguistic task used in Experiment 1 actually encouraged the participants to encode the scenes linguistically’ (Finkbeiner et al: 454).

Gennari, Sloman, Malt and Fitch (2002) compared speakers of the two prototypical languages for Talmy’s two types, English and Spanish, and established no clear difference between the groups when the represented situations were not described prior to the similarity judgments. But when they asked the subjects to provide such a description in their native tongues prior to their choice, a stronger preference for Path in the Spanish group was observed. This could be taken as offering support for a version of Slobin’s thinking-for-speaking.

Pourcel (2005) reports evidence for an effect of language-type in a memory-based study, but in her categorization study with 15 triads in the form of video-clips representing people involved in various motion situations, she failed to find any difference between English and French speakers. Both without and with prior linguistic description there was a preference for same-Path categorization for both language groups. An interesting finding, however, was that two types of motion situations, corresponding to our distinction between bounded and unbounded translocation described in Section 3 gave different results: there was a strong Path bias for bounded motion (‘telic Path’), but this bias was neutralized, and with linguistic description even replaced with a Manner-bias for the unbounded motion situations (‘atelic Path’) (cf. Pourcel 2005: 243--245). Finally, an important difference compared to the study of Finkbeiner et al. (2002) was that all three video-clips in each triad were presented *sequentially* (in different orders).

Bohnemayer, Eisenbeiss and Narasimhan (ms), conducted the most extensive study of this type, in the sense that they contrasted not just two or three languages, but 17 typologically, areally and genetically diverse languages, including Polish (S-framed with verb-prefixes), German (S-framed with verb-particles), Japanese (V-framed) and Lao (serial-verb, ‘third type’). The stimuli used by Bohnemayer, Eisenbeiss and Narasimhan (ms) are identical to those used in our studies described in Section 5, where we describe them in more detail, but suffice it for now to point out that they involve an animated, smiling tomato-like figure which ‘jumps’, ‘rolls’, ‘spins’ or ‘slides’ either up/down a ramp, or left/right across a field, either with or without crossing the boundaries of the Ground objects. While Pourcel (2005) criticizes the animated ‘unnatural’ character of the protagonist, and the fact that it allows a limited scope of Manners of motion, we would argue that this design – similar to that of Finkbeiner et al. (2002) – has a considerable advantage: it contrasts Manner and Path (in some cases: Direction) completely systematically, so that the two choice situations are identical with the target in each triad, apart from the manipulated variable. Furthermore, given that even illiterate speakers of languages such as Jukatek living in traditional societies did not have difficulties interpreting the situations with the ‘animate tomato’ capable of self-motion suggest that it was not so ‘unnatural’.⁴

The foremost strength of the study of Bohnemayer et al. (ms), however, is the large number and variety of the languages involved. Accordingly, the results showed a wide variation in the produced biases in the similarity judgment task: from 85% same-Manner for the Polish group to 43% same-Manner for the Jalonke and Jukatek groups, but no general pattern for speakers of S-languages preferring Manner more than those of V-languages. This rather convincingly shows

that the binary ‘motion-event typology’ of Talmy is not *sufficient* to predict categorization preferences (though it may be one of the factors that play a significant role) and a better conceptual and methodological basis is necessary in matching motion (i.e. translocation) typology and linguistic relativity. Interestingly, Bohnermeyer et al. (ms) also established a language-general difference between the representations of situations in which the figure moved up or down (diagonally) on a ramp from the cases when in moved either from-to, or out of-into a landmark: in the latter case the subjects were more likely to base their similarity judgment on the basis of Manner than in the first. The authors attempt to explain this in terms of the greater ‘simplicity’ of the ramp scenes, involving one reference object (the ramp), rather than two.

But another explanation is possible: in the case of the ‘ramp’ scenario, the situation was at least ambiguous between unbounded translocation (moving upward or downward) and bounded translocation (moving to ‘the top’ or ‘the bottom’ of the ramp). On the other hand, the other two types of situations involved unambiguously bounded translocative events, with or without boundary crossing. Thus, as in the study of Pourcel (2005) the similarity judgments for the bounded and unbounded translocative situations differed, implying the cognitive relevance of this distinction. However, the biases in the two studies were *converse*: stronger preferences for same-Path categorization for unbounded than bounded situations in the Bohnermeyer et al. (ms) study and stronger preferences for same-Path categorization for bounded than unbounded motion in that of Pourcel (2005). The conclusion is therefore that this factor must interact with other ‘variables’ such as the nature of the stimuli (animated vs. non-animate) and/or the nature of the presentation of the alternatives (sequential vs. parallel). It is possible furthermore that these factors affect the degree to which language influences the categorization process.

In sum, the studies of the categorization of motion (translocation) situations by speakers of different languages over the past few years have yielded different and somewhat contradictory results. What has become clear though is that:

- a) the nature of the stimuli – static vs. motion pictures, animated vs. ‘real life’ video-clips, sequential vs. parallel presentation – influences the similarity judgments;
- b) different types of motion situations can yield different categorization preferences;
- c) the role of linguistic description, especially prior to making the similarity judgment, needs to be more carefully explored;
- d) more languages than simply two representatives of the binary typology need to be taken into consideration.

Our empirical studies using the Event Triads tool of Bohnermeyer et al. (ms), (Section 5.1 and 5.2) and a modification of it (Section 5.3) with speakers of Swedish, French and Thai address the latter three points. In Section 6, we will offer an interpretation of the apparently contradictory results, suggesting a coherent explanation.

5 Three empirical studies with Event Triads

5.1 Study 1

In our initial study we used the original *Event Triads* elicitation tool, developed at the Max Planck Institute for Psycholinguistics, Nijmegen (Bohnenmeyer, Eisenbeiss and Narasimhan 2001), which was created to investigate biases for Path or Manner in forced-choice similarity judgments. First a 5-second long animated film of the moving tomato-like figure is shown on the whole computer screen, and after one second two clips – identical to the first but differing with respect to either Path/Direction or Manner – are shown in smaller windows in parallel (see Figure X.2). The tool includes 72 such different triads, ‘distributed across 6 randomized presentation lists in a Latin-square design’ (Bohnenmeyer, Eisenbeiss and Narasimhan, ms), where each list was presented to two participants, in reverse order.

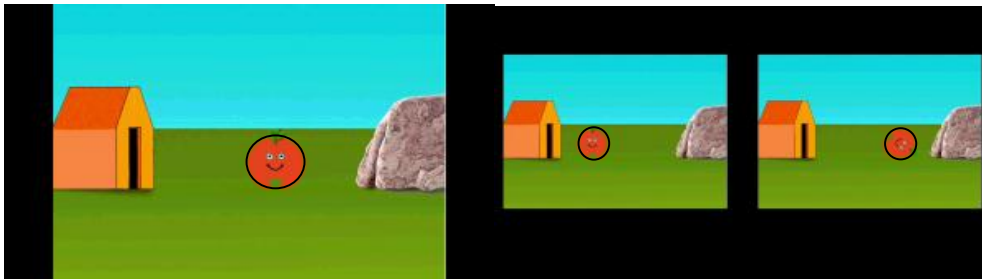


Figure 2. An example triad from the stimulus tool Event Triads. The black outline of the tomato-figure is added, so that it would be more clearly visible when viewed in a black and white printout. In the elicitation tool the red color of the tomato contrasts clearly with that (green or white) of the background and no such outlining is necessary.

Thus, the Event Triads tool requires 12 participants for varying the order of presentation, for counterbalancing the left/right position of the Manner-similar and Path/Direction-similar smaller films in the second segment of the triad, and for trying all possible combinations of Path/Direction and Manner. Following three practice trials, each participant was given 50 triads. Of these, only 12 contrasted Path and Manner, while the other 38 were distracters in which the figure stops at mid-scene, or involve differences in color, or completely different situations such as one figure throwing an object to another. The 12 crucial trials can be divided in 3 groups, depending on the type of motion situation represented in the first segment (large window in Figure X.2), using the terminology introduced in Section 3:

- 4 bounded translocative situations, from Landmark₁ to Landmark₂ (*FROM/TO Path*)
- 4 bounded translocative situations, out of Landmark₁ into Landmark₂ (*OUT/INTO Path*)
- 4 unbounded translocative situations, up (or down) (*VERTICAL Direction*)

As pointed out, in each of these cases the second segment presents a choice between a situation in which the figure moves according to the same Path or Direction, but differs in Manner, or has the same Manner, but moves in the reverse Path or Direction. There are four different types of Manner that can be glossed in English as *jumping*, *rolling*, *spinning* or *sliding*. As mentioned in Section 4, these manners of motion are quite perceptually salient and conspicuous (especially for

a ‘tomato’) and it was expected that there would be a relatively strong Manner bias for the similarity judgments irrespective of language. Nevertheless, one could expect this bias to be strongest (everything else being equal) for speakers of S-languages, and weaker for speakers of a V-language (i.e. relatively more Path-based choices). As for speakers of serial-verb languages such as Thai, we expected these to show an intermediary position, given that both Manner and Path are easily codable, or alternatively equally ‘backgrounded’, in such a language (cf. Section 2).

Participants were 3 groups of 12 monolingual undergraduate students from Lund University (*Swedish group*), the University of Poitiers (*French group*) and Chulalongkorn University (*Thai group*). The procedure was the following: each participant was given three practice trials, followed by the 50 test triads. For the *similarity judgment task*, after every triad, the participant had to point to either the left or the right half of the second segment (cf. Figure X.2) which was to serve as the answer to the question ‘Which is most similar to the first film – the left or the right?’ Following this and a brief pause, there was a *verbal description task*, in which the participant was asked to describe 18 video-clips of only the first fragment, representing the three kinds of translocative situations in the data: 4 Vertical, 4 FROM/TO and 10 OUT/INTO.⁵ The results of the similarity judgments task were marked in a coding sheet, and the verbal description were recorded and transcribed, and both were subsequently subjected to statistical analysis.

The results for the similarity judgements are presented in Figures X.3 and X.4. Contrary to our expectations, it was not the Swedish, but the Thai group that had the largest proportion of same-Manner choices: the difference between the Thai group on the one side, and the French and Swedish groups on the other was statistically significant, $\chi^2(2) = 14.415$ ($p < .05$), while that between the French and the Swedish groups was not.

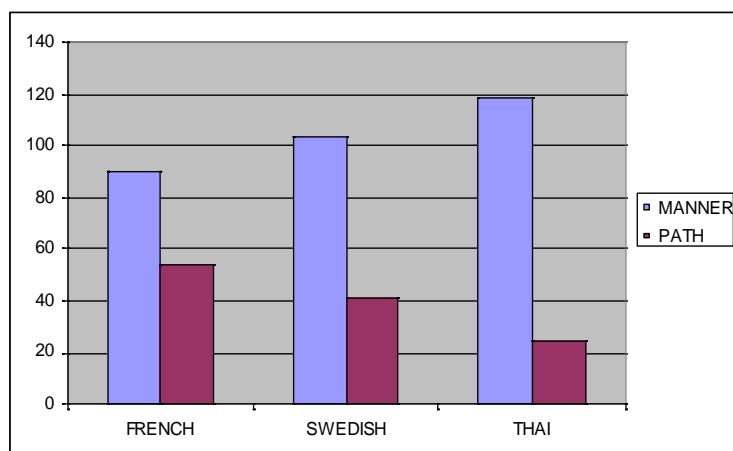


Figure 3. Distribution of Manner vs. Path/Direction biased categorization choices for the three language groups of French, Swedish and Thai. Max = 144 (12 participants * 12 choices) per language

More interesting, however, were the results when we divided the 12 test triads according to the three types listed above: FROM/TO, OUT/INTO and VERTICAL. As can be seen in Figure X.4, the classification of the Vertical unbounded translocative situations for the French group differed significantly from the other two types of situation ($\chi^2(2) = 6.933$, $p = 0.031$), while there were

no such differences for the other two languages. Given that the total number of choices of this type was 48, the French group actually displayed a weak Path bias (25 vs. 23) for this type.

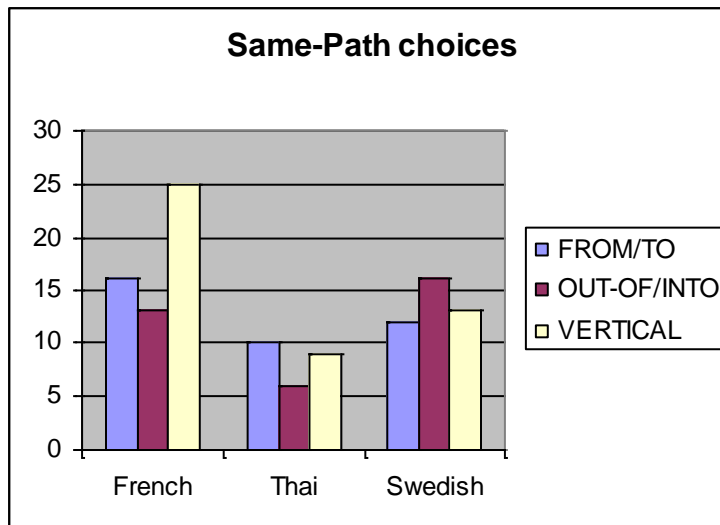


Figure 4. Same-Path based choices for the three language groups, divided by situation types: FROM/TO Path, OUT-OF/INTO Path, and VERTICAL Direction. Max = 48 (12 subjects * 4 choices) per language

To help interpret this, we analyzed the results of the linguistic description task for the French group in detail. We asked if there is a correlation between the differences in the group’s similarity judgments (between the Vertical and the other two types) and *the semantic and grammatical structure of the descriptions* of the group. In analyzing the latter, we had a mini-corpus of 216 descriptions (12 participants * 18 translocative stimuli). We found indications for two such correlations. Table 3 displays all the verbs (types and tokens) in the French descriptions, divided by the categories Vertical Direction, Horizontal Path (FORM/TO + OUT/INTO), Manner and Other. The absolute number of tokens were actually mostly Manner verbs, which may appear at first hand surprising, given that French is (supposedly) a V-language, but as Pourcel (2005) and Pourcel and Kopecka (ms) show, French involves several types of constructions where Manner is expressed by the main verb (see also below). More relevant for our purposes, however, was the fact that the Direction verbs, above all *monter* and *descendre* were relatively more frequent than the Path verbs: there were only 4 stimuli (per subject) with situations that could be described with these, whereas there were 14 stimuli for the Path verbs (10 INTO and 4 TO). The ratio 8.75 vs. 5.36 in favor of Direction verbs compared to the Path verbs suggests that Direction was more readily codable than Path, and thus *possibly* also attracted relatively more attention than Path, compared to Manner in the similarity judgment task. But admittedly this is only a tentative suggestion, and it says nothing about the direction of (possible) causation involved: it is equally possible that Direction is more easily cognitively ‘processable’ than Path, and therefore received a higher degree of linguistic coding.

Table 3. Motion verbs produced by the French group in Study 1, in response to the linguistic task involving 4 Direction and 14 Path (4 FROM/TO and 10 OUT/INTO) stimuli.

DIRECTION	PATH	MANNER	OTHER
MONTER (ascend): 18 DESCENDRE (descend): 15 GRAVIR (climb, struggle up a slope): 1 DÉVALER (tumble down): 1	SORTIR (exit, go out): 23 RENTRER (enter/come back home): 23 PARTIR (leave): 14 TRAVERSER (cross): 6 PASSER (pass, go through): 2 AVANCER (move forward): 2 ARRIVER (arrive): 1 RETOURNER (go back): 2 REVENIR (come back): 2	ROULER (roll): 54 PIVOTER (pivot, revolve): 1 FAIRE DES GALIPETTES (somersault): 1 TOURNER (turn, spin): 14 FAIRE LA TOUPIE (move like a spinning top): 2 GLISSER (slide): 14 SAUTILLER (hop, skip): 11 SAUTER (jump, leap): 3 FAIRE DES BONDS (leap, spring up): 1 BONDIR (jump, bounce): 1	ALLER (go): 81 FAIRE UN DÉPLACEMENT (make a move): 1 SE DÉPLACER (move): 7 S'ARRÊTER (stop): 8
Stimuli: 4 Verb tokens: 35 Ratio: 8.75	Stimuli: 14 Verb tokens: 75 Ratio: 5.36	Stimuli: 18 Verb tokens: 102 Ratio: 5.67	Stimuli: 18 Verb tokens: 97 Ratio: 5.39

The second correlation could more easily be related to a potential linguistic effect. It turned out on analysis that in the verbalization of the bounded translocative (Path) stimuli, only 18 out of 43 Manner expressions were present in the same clause as the Path verb, while the remaining 25 (58%) occurred in an additional clause. On the other hand, in the descriptions of the unbounded translocative (Direction) stimuli, in 27 out of the 28 cases which also included an expression of Manner, the latter was expressed in the same clause, as in (33). In only one case out of 28 (3.5%) was Manner expressed in an additional clause.

- (33) *La tomate monte la montagne en roulant*
 DEF tomato climb DEF mountain rolling
 DIRECTION MANNER

What this could be attributed to is the difficulty of encoding both Path and Manner in the same clause, as opposed to Direction and Manner, due to the boundary-crossing constraint (cf. Section 3.4) This would lead to Manner being expressed separately in the case of bounded translocation, as the main verb of a separate clause, and thus making it more *semantically salient*, somewhat along the lines suggested by Papafragou et al. (2002), mentioned in Section 4, though not in comparison to other languages, but *in comparison to other types of motion situations within the same language*.⁶ The reasoning is thus somewhat paradoxical, and called for a further study in order to see if this correlation and possible explanation could be further supported.

5.2 Study 2

In this study we replicated Study 1, but using only 12 French speakers, this time of different ages (24 to 60), and professional/educational backgrounds. The linguistic descriptions were subjected

to more thorough analysis. Since the Swedish group in Study 1 did not display a bounded/unbounded translocation asymmetry, this study was not designed as a comparative one.

The results from the similarity judgment task followed the same pattern as in Study 1: a general (though somewhat reduced) Manner bias but a reversal in the case of the Vertical Direction motion situation: 27 vs. 21 same-Direction choices. Furthermore, in dividing the Vertical stimuli in two groups depending on the direction of motion (24 each), it turned out that while in the case of UPWARD motion the ratio between same-Manner and same-Direction was even, in the case of DOWNWARD motion, there was a strong preference for same-Direction over same-Manner (15 vs. 9).

The verbal descriptions were this time analyzed differently. Each description was attributed to one of 5 different types: (i) Path/Direction+Manner in the same clause, (ii) Path/Direction & Manner in different clauses, (iii) Path/Direction only, (iv) Manner only and (v) Other, and each one of these was crossed with the *four* situation types (OUT/INTO, FROM/TO, Vertical-UP and Vertical-DOWN) – due to the differences in the similarity judgment task between the latter two, we decided to treat them separately. The results, displayed in Table 4, showed striking differences between the situation types. Whereas the most common type of verbal description for the bounded translocative stimuli, and especially FROM-TO, was that of Manner only, that for the unbounded translocative ones, and especially Vertical-DOWN was that of Direction+Manner in the same clause (highlighted in Table 4). Furthermore, taking together the rightmost two columns in Table 4, we can see that in the large majority of cases of FROM/TO (81,3%) Path was not expressed at all, and similarly for half of the OUT/INTO stimuli (49,2%). On the other hand, only a small minority of Vertical stimuli (16,7% and 20,8%) lacked an expression of Direction. No such conspicuous imbalance could be observed in the descriptions lacking Manner (the third and the fifth columns taken together).

Table 4. Classifying the data from the verbal description task in Study 2: 4 types of motion situations and 5 expression patterns, with the highest proportions highlighted

Situation \ Expression	Path/Direction +Manner (same clause)	Path/Direction & Manner (diff. clauses)	Path/Direction only	Manner only	Other
FROM/TO (Tot: 48)	1 (2,1%)	6 (12,5%)	2 (4,2%)	31 (64,6%)	8 (16,7%)
OUT/INTO (Tot: 120)	15 (12,5%)	35 (29,2%)	11 (9,2%)	41 (34,2%)	18 (15%)
VERT-UP (Tot: 24)	11 (45,8%)	3 (12,5%)	6 (25%)	4 (16,7%)	0
VERT-DOWN (Tot: 24)	14 (58,3%)	3 (12,5%)	2 (8,3%)	5 (20,8%)	0

Thus, we find a strong correlation between the French speakers' similarity judgments – the same-Path bias for the Vertical stimuli – and their linguistic descriptions: more frequent Path/Direction expression, particularly in the same clause. Admittedly this is again only a correlation, and given that the descriptions were produced *after* the similarity judgment task, this could not be a matter

of any (direct) causation. Nevertheless, the correlation was so obvious that it seems paramount to search for an explanation.

One suggests itself once we realize that the ‘Path’ in the Vertical stimuli was rather Direction, and that the stimuli represented situations that were more readily interpreted as unbounded, rather than bounded. According to our redefinition of the ‘boundary-crossing constraint’ (Section 3.4) it is above all the boundedness of the situation that makes it difficult to express Manner and Path in the same clause in a V-language, while there is no such difficulty with respect to Manner and Direction. Thus, given that Manner is *perceptually salient* – which we know independently to be the case for the Event Triads stimulus tool – it is more likely to be expressed linguistically in a separate clause (row 2), or alone (row 4) in verbalizing bounded than unbounded translocative situations. Furthermore, this could increase the *semantic salience* of Manner, compared to the cases where it is ‘conflated’ in the same clause with Direction and thus lead to a stronger same-Manner bias.

Notice also in Table 4 that Manner was most often co-expressed with Direction in the case of Vertical-DOWN, and this was also the situation type that produced the most significant ‘Path’ (i.e. Direction) bias in the similarity judgment task. While this may be somewhat post hoc, we can interpret the difference between the two kinds of Vertical motion stimuli in terms of ‘degrees of boundedness’: e.g. rolling down is more open-ended than rolling-up to the top of a hill, and hence the Vertical DOWN stimuli represented the *least* bounded situation in the set. Thus we are lead to a tentative generalization (and prediction): *The more bounded a situation, the more salient Manner will be for speakers of a V-language.*

Pourcel (2005: 149) calls a similar interpretation that Zlatev and David (2004) offered of these results (though in terms of the concept of *telicity*) ‘counter-intuitive’, but we beg to disagree. As pointed out earlier, Bohnemeyer et al. (ms) noted a general tendency for lower same-Manner bias in the Vertical triads in the 17 languages studied, and while they did not find a general interaction with language-type, it remains unclear to what extent all the different languages in their sample abide by the ‘boundary crossing constraint’. Swedish and Thai do not, and we did not find a bounded/unbounded asymmetry in their speakers’ similarity judgments, which in the case of French we did. Pourcel (2005) also found an asymmetry, but in the opposite direction: greater Path salience for the bounded than for the unbounded situation. However, the design-differences between the two studies can perhaps be called on for an explanation, cf. Section 6.

Finally, note that we do not interpret the combined results of Study 1 and Study 2 in terms of a ‘Whorfian’ effect, since the differences in the categorization preferences between the language groups seems to be due to an *interaction* between language-independent differences in the situation types, and the constraints of a particular (type of) language. To further investigate this possible interaction, we conducted our next study, which more explicitly contrasts different contexts in which language can be thought to influence the categorization of motion situations *to different degrees*.

5.3 Study 3

For the purpose of our third study, we modified the Event Triads elicitation tool so that two groups of 12 Swedish and two groups of 12 French subjects participated: Group 1 for both languages performed the similarity judgment as in the original Event Triads tool, whereas for Group 2 there was a break after the first segment and the participant was asked to ‘describe the film just seen’, after which the second segment was shown and the participant was asked to make the similarity judgment. Furthermore, the number of distracters was decreased rather drastically from 38 to 8, leaving the total number of triads per participant to 20, where each first segment was described by all participants: for Group 1 after the similarity judgment task was completed, and for Group 2 prior to each judgment. In this way we could investigate possible correlations between the descriptions and the choices not only on a type-by-type basis (as in Studies 1 and 2), but also on a triad-by-triad (instance) basis. The reduction of distracter triads was necessary, since describing 50 video-clips, most of which are near-identical, would have been both tiring for the participants and could lead to a sort of ‘habituation’ in which they would fall into a stereotypical pattern of description that is less likely to reflect naturalistic language use.

The results were highly interesting. Whereas the similarity judgments for Group 1 (post-choice description) were similar to those in Study 1 and practically identical for the two languages ($\chi^2(1) = 0.14, p > 0.05$), i.e. a preference for same-Manner choices (albeit a weaker preference, cf. Figure X.3), the situation was completely reversed for Group 2 (pre-choice description), with a surprisingly strong bias for same-Path choices, as shown in Figure X.5 for both the French and Swedish groups. The difference between Group 1 and Group 2 was extremely significant ($p < 0.0001$). Furthermore, there was a stronger Path/Direction bias for SG2 than FG2, which was also significant ($\chi^2(1) = 4.964, p=0.026$).⁷

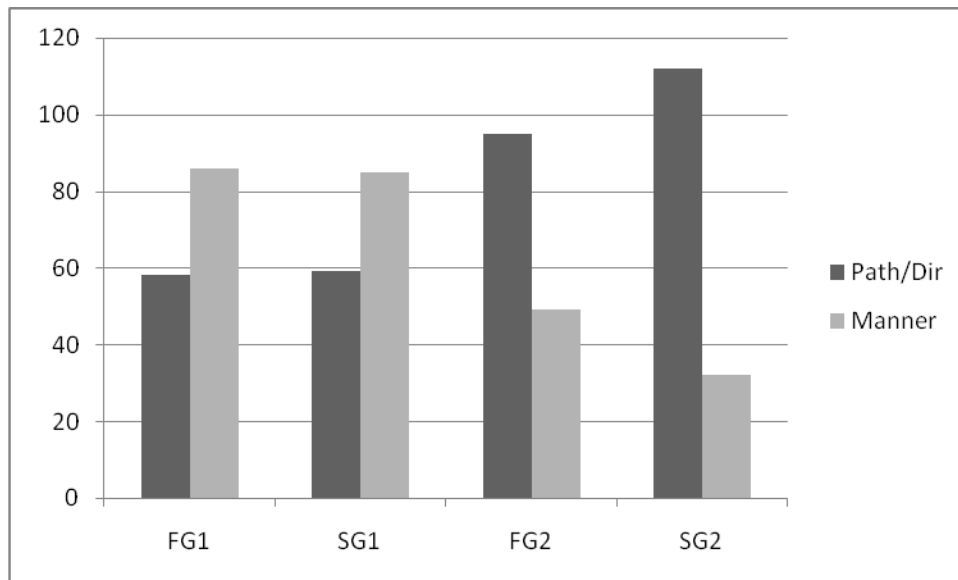


Figure 5. Total results of same-Path/Direction vs. same-Manner preference for French (FG1) and Swedish (SG1) Group 1 (post-choice description) and French (FG2) and Swedish (SG2) Group 2 (pre-choice description). Total number of choices is 144 per group.

When we divided the 12 test triads according to the three types of situations as before (IN/OUT, FROM/TO and VERTICAL), we noticed, however, also a difference between Group 1 and the previous results: in the case of VERTICAL the Manner-bias was neutralized for both the Swedish and the French speakers (the slight difference between SG1 and FG1 for Vertical is not statistically significant): see Figure X.6 and X.7.

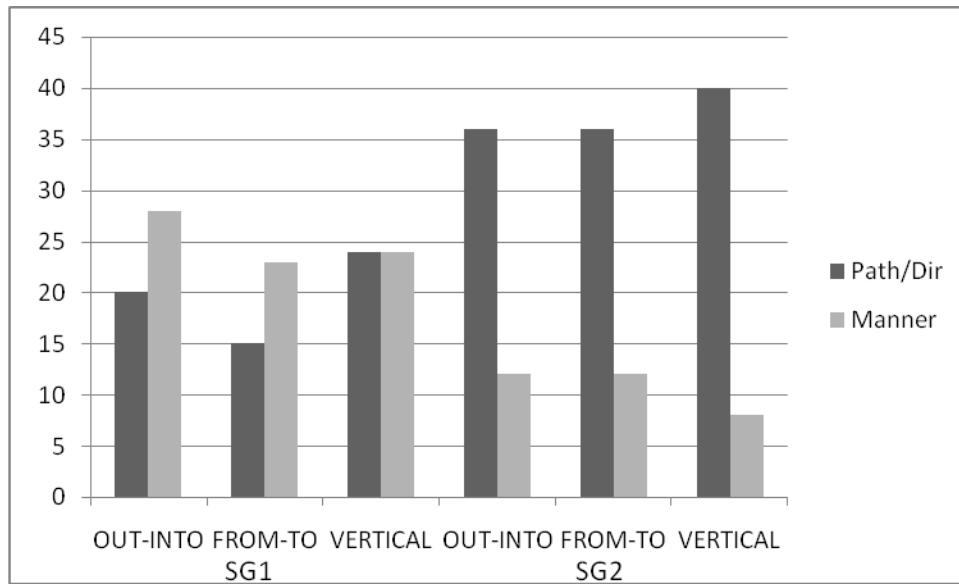


Figure 6. The results for the two Swedish groups, divided by the three different situation types: OUT-INTO, FROM-TO and VERTICAL. Total number of choices per situation type and group is 48.

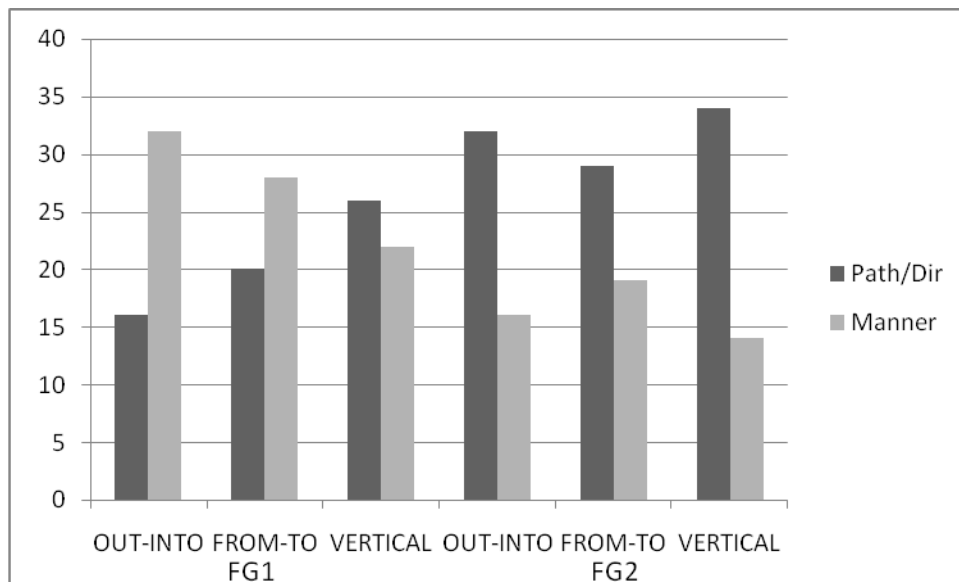


Figure 7. The results for the two French groups, divided by the three different situation types: OUT-INTO, FROM-TO and VERTICAL. Total number of choices per situation type and group is 48.

We coded the linguistic descriptions for the presence of Manner expressions: Manner verbs such as *hoppa* and *sautille* (‘jumps’) and adverbials such as *snurrande* or *en roulant* (‘rolling’), Path expressions such as *från* or *de* (‘from’) and *till* or *a* (‘to’) and Direction expressions such as *upp* (‘up’) or *monte* (‘climbs’) and *ner* (‘down’) or *descend* (‘descends’) and looked for correlations between the presence of these elements and the choices of the subjects.

Table 5. Correlations of significant value (Pearson’s Correlation, significant at $> \pm .3$ at the .05-level, two tailed) between elements in the descriptions (Direction, Path, Manner) and corresponding choice for the two groups of French speakers (FG1 and FG2) and the two groups of Swedish speakers (SG1 and SG2), divided by situation type (From/To, Out/Into, Vertical) Non-existing or non-significant correlations are marked as ‘×’.

Group	Type	Direction	Path	Manner
FG1	From/To	×	×	×
	Out/Into	×	×	×
	Vertical	×	+.308	×
FG2	From/To	×	×	×
	Out/In	×	×	-.304
	Vertical	×	×	-.329
SG1	From/To	×	-.309	×
	Out/Into	-.338	×	×
	Vertical	-.302	×	×
SG2	From/To	×	-.307	×
	Out/Into	×	-.443	×
	Vertical	+.674	×	×

Surprisingly, there were few *positive* correlations: for SG2-Vertical and for FG1-Vertical. In qualitative terms, this means that if a subject had used a Direction expression, he was more likely to make a same-Direction than same-Manner choice. We are not sure how to interpret the *negative* correlations for SG1, SG2 and FG2. On the face of it, it seems that e.g. if a French speaker had used a Manner expression (in the pre-choice description group, FG2), he was less likely to make a same-Manner choice. Also, it was surprising that the positive correlation for the French speakers was for FG1, the post-choice describing group, and it involved Path, rather than Direction expressions. In other words, the results do not lend themselves to an explanation in terms of Slobin’s (1996) thinking-for-speaking hypothesis. According to the latter, and the classification of Swedish as an S-framed and thus Manner-salient language and of French as a V-framed language, one would have expected a Manner correlation for SG2 a Direction/Path correlation for FG2. In fact, the only clear correlation was for SG2, and it involved Direction rather than Manner.

A further indication that the results cannot be explained only on the basis of linguistic differences and their effects is the neutralized Direction-Manner bias in the case of the translocative unbounded (VERTICAL) situations for both the French and the Swedish groups (see Figures X.6 and X.7). Unlike the results from Study 2, this cannot be explained by a linguistic effect since Swedish does not obey the boundary-crossing constraint. Thus, the asymmetry in the choices between VERTICAL and the other two types of stimuli thus corroborate our claim in Section 3 that bounded and unbounded translocative situations differ (even) pre-linguistically. We may

express this by saying that *Direction is conceptually simpler than Path*: all that is required is to pay attention to the *vector* (or the shape of the trajectory) of translocation, rather than perform an explicit ‘parsing’ of the translocative event in terms of Source, Via and/or Goal. Like Manner, Direction seems to be a category that is *more perceptually given than conceptually derived*, and thus less subject to the effects of linguistic mediation, as understood by Vygotsky (1978, 1986).

6 Discussion: From linguistic relativity to linguistic mediation

The Soviet psychologist Lev Vygotsky (1896--1934) distinguished between ‘higher’ and ‘lower’ mental functions, described by Kozulin (1986: xxv) as follows:

Vygotsky [...] made a principal distinction between ‘lower,’ natural mental functions, such as elementary perception, memory, attention, and will, and the ‘higher,’ or cultural, functions which are specifically human and appear gradually in a course of radical transformation of the lower functions.

Thus, what is uniquely human, according to Vygotsky, is the ability to use artefacts and signs, *mediating* between perception and behaviour, and functioning as ‘psychological tools’ for the purpose of reflection and self-regulation: ‘the central fact about our psychology is the fact of mediation’ (Vygotsky 1933, quoted by Wertsch 1985:15). The most important kind of signs, and thus psychological tools, are according to Vygotsky those of language. Like artefacts, linguistic signs are initially social and interpersonal, but with experience become *internalized* and thus intra-personal. Vygotsky argued that such internalization occurs via so-called ‘egocentric speech’ in early childhood, and that such speech is highly functional for the child since its presence increases with the difficulty of the task to be performed.

Applying the notion of linguistic mediation to the triad studies, both our own, and those described in Section 4, allows us to make sense of most of the results reported in the literature. First, due to the nature of the task, the similarity judgment task can be performed either more *directly* (i.e. using perceptual categorization) or more *mediatedly* (i.e. using external or internal speech). This can explain the results of both Gennari et al. (2002) and Finkbeiner et al. (2002), in which a typologically congruent bias was observed in the tasks where language was used either overtly or (apparently) covertly, but not otherwise. On the other hand, if Manner is a category which is (in general) more perceptually and conceptually *simpler* than Path, as suggested earlier, then tasks which induce categorization through less mediated processes, should bias for Manner rather than Path, and vice versa. We can thus explain the results of Study 3 for both the Swedish and the French groups through a possible ‘Vygotskian effect’ of language on the categorization of (translocative) experience: linguistic mediation yields an explicit ‘parsing’ of the components of a motion situation, and thus attention to more *abstract* components such as Path than to more perceptually immediate components such as Manner (or Direction). Such an effect appeared to be independent of typological differences between languages. At the same time, this interpretation predicts that if Manner is expressed in French, it will be more prominent *semantically*. Whether this would lead to a cognitive effect, however, is less clear: Study 2 seems to support this, while Study 3 (e.g. the negative correlations for Manner in Table 5 for FG2), did not.

At the same time, if the Manner of motion is of a *complex type*, such as that in the stimuli used by Finkbeiner et al. (2002), while ‘Path’ is more a matter of ‘moving left/right’ and thus Direction, then the opposite tendency should be observed: a greater same-Manner bias will be observed in

the more demanding task, involving sequential presentation and language-based short term memory, which again was the case established in that study.

This can furthermore even help us understand the apparently contradictory findings in the triad study of Pourcel (2005): In her first experiment with both French and English participants, the sequential presentation of stimuli possibly already induced the use of internal speech, resulting in an overall preference for ‘same Path’. The second experiment used explicit written description, which ‘balanced’ the preferences somewhat, but still privileged Path. What remains unaccounted for, though, is why ‘same-Manner’ preferences *were higher* for the ‘atelic Path’ (unbounded) situations than for the ‘telic Path’ (bounded) situations, while in our studies the asymmetry was in the reverse direction: a neutralization of the Manner-bias, and thus relatively lower ‘same-Manner’ preferences for the ‘less bounded’ situations. The divergent results can perhaps be explained by the marked difference in the nature of the stimuli used: whereas the relevant kinds of Manner in Pourcel’s experiment were mostly of the ‘default’ kind and thus less perceptually salient, those in our studies were all attention-grabbing, yielding an *overall* Manner-bias on categorization (mostly) on the basis of perceptual processes. This bias was then *reduced* for the slope scenes due to the similarly perceptually more immediate notion of Direction and possibly also due to the greater ease of verbalizing Manner in the same clause as Direction (as opposed to Path) for French. On the other hand, Path and Direction were the most relevant aspects in Pourcel’s stimuli, while (simple clause) verbalization would instead have promoted Manner to higher prominence. In any case, both studies imply the importance of distinguishing between what we have analyzed as bounded vs. unbounded translocation, and thus offer support for the taxonomy presented in Section 3.

7 Summary

In this chapter we have tried to show that ‘motion event’ typology has suffered for quite some time from conceptual and empirical problems, and despite the indubitable contributions of scholars such as Talmy and Slobin, it is time that we move on, and establish a more coherent framework for describing our experiences of motion. Inspired by the literature on situation types (Vendler 1967), as well as Durst-Andersen (1992) and Pourcel (2005), we have attempted to provide one such framework through our taxonomy of motion situations, which, we suggest, are largely independent of the way different languages ‘lexicalize’ motion.

The second step, which we have only here touched, is to try to establish how as many (diverse) languages as possible express this experience. Talmy’s binary typology has clearly outlived its time, but exactly how many different types of languages in terms of their expression of translocation there are is currently an open question.

In the cases where languages systematically differ in this respect, we can investigate possible linguistic effects of various sorts and strengths on seemingly ‘non-verbal’ cognitive tasks, and thus contribute to the neo-Whorfian program. We have described three such studies which suggest at least some effect of the differences between French on the one hand, and Swedish and Thai on the other, on the categorization of translocative situations on the basis of the components Path, Direction and Manner, arguing for the necessity of distinguishing between the first two. The effects have, however, been attributed to an interaction between language-independent factors

and linguistic constraints, and cannot support a strong version of the Whorfian hypothesis ('different languages entail different worldviews').

We have also argued that we should be open to the possibility that the differences between languages may be relatively minor compared to their similarities – at least as far as the categorization of (motion) experience is concerned – and have thus suggested possible 'Vygotskian' rather than 'Whorfian' effects, based on the differential role of linguistic mediation in the different tasks and study designs. Further studies with (typologically) different languages are likely to shed more light on these issues. Progress in linguistic typology and psycholinguistics should thus go hand-in-hand.

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Notes

¹ Zlatev (2005) refers to this as the distinction between 'elaborated' and a 'schematic' concept of path, and argues for the need to separate the latter from the concept of direction, as in the present chapter.

² The original examples in Pourcel (2005, Chapter 5) are respectively (6), (90) and (92).

³ Note that our use of the term 'figure' corresponds to that used by Talmy (2000) and Levinson (2003), the term 'trajector' (Lakoff 1987; Regier 1996; Zlatev 1997) or 'referent' (Miller and Johnson-Laird 1976). On the other hand, our use of the term 'landmark', is more specific than that used in much of the cognitive linguistic literature (Langacker 1987), in referring to some physical object, which is typically expressed through a noun phrase in language (cf. Zlatev 2005, in press).

⁴ One thing to be borne in mind, however, is that this design has been shown to give a general bias towards Manner-based categorization, probably due to the conspicuousness of the motion of the 'tomato' figure, so that the results produced using this stimulus tool cannot be directly compared with results obtained using another elicitation tool (cf. Kopecka and Pourcel 2005).

⁵ This unequal distribution was due to the fact that at the time of our first study we had not yet realized the importance of distinguishing between the three types.

⁶ Notice that this also helps explain the high proportion of Manner verbs produced by the French group, shown in Table 3.

⁷ However, since the Group 2 data was both compared both with Group 1, and within the two sub-groups (FG2 and SG2), Bonferroni correction (here, p-value * 2) would be required, placing the difference between FG2 and SG2 on the border of significance.

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