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 flow of water in the river. *Panta rei.*

But all instances of (perceived) motion are not of the same kind. In this chapter, we will be mostly concerned with one type of motion experience: translocation: the continuous change of an object’s average location relative to a reference frame. By ‘object’ we mean either animate or inanimate entities, whose motion can be either self-propelled or externally caused. In emphasizing experience, rather than the objective fact of motion, we adopt a phenomenological perspective situating motion in general, and translocation more specifically, in the lifeworld of the human subject (Husserl 1999 [1907]), rather than in “objective reality”. This is not due to a philosophical position on whether motion exists independent of observers, but due to the relatively uncontroversial assumption, often emphasized by cognitive linguists nowadays (e.g. Lakoff 1987), but with roots in antiquity that language refers to and classifies not reality in itself – but reality as conceived by human beings (cf. Itkonen 1991).

One can readily acknowledge that most of the objects mentioned in the examples in the first paragraph – the rising chest, the tapping foot, the flowing water – do not involve translocation in the sense defined. On the other hand, the bird that flies to its nest, or the boat that flows down the river do engage in translocation, since they change their location relative to a reference frame. In the second case – the boat on the river – there will be perceived translocation relative to the viewpoint of an observer standing on the shore, but if this observer is on the boat itself, it is the shore that will (appear) to move in the reverse direction – as familiar from the old philosophical parable: “When you are in the boat…”.

The first goal of this chapter is to provide a phenomenologically-based classification of situations involving motion in general and translocation in particular. We believe that such a classification is necessary in order to systematically address the question: *How do various languages express translocation, and do linguistic differences imply differences in conceptualization, and thus also in (one form of) experience?* 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. Somewhat surprisingly, one finds an acknowledgement 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)

During the past 20 years or so, Talmy’s analysis of “motion events” (Talmy 1985, 1991, 2000) has been widely used as a means to characterize the common structure of motion experiences, an analysis which has provided the conceptual framework for linguistic relativity studies focusing on motion (e.g. Slobin 2003). However, as we argue in Section 2, both Talmy’s model, and the alternative model proposed by Pourcel (2005) leave a lot to desire. Hence, we are lead to develop our own classificatory scheme for motion situations, which will be described in Section 3.

Having done this, and reviewed 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 translocative 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 (Bohmeyer, Eisenbeiss and Naranhimsan 2001), and an extension of it (Blomberg 2006) we show that the answer to this question appears to be not unambiguous. To anticipate, our empirical findings suggest that the categorization of translocative 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 own results, but also some of the contradictory findings reported in the recent literature. In Section 7 we summarize the discussion of the chapter.

2. Motion and “motion-event typology”

If the essence 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 typology and semantics during the past decades? Talmy himself offers the 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 in glossing over the major experiential division: change vs. stasis. We shall return to this central question below.

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 famous motion-event typology, shown schematically in Figure 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.

*S*-languages
(e.g. English)

I swam across the river

\[\textbf{motion} \quad \textbf{manner} \quad \textbf{path}\]

\[\textbf{co-event} \quad \textbf{core-schema}\]

*V*-languages
(e.g. French)

J’ ai traversé le fleuve (à la nage)

1sg AUX cross/PAST DEF river swimming

**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

Unfortunately, it has become increasingly obvious 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 also many of the contributions of Strömqvist 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 “third” type, distinct from both the types illustrated in Figure 1. As Table 1 shows, comparing the three languages in terms of 9 characteristics, in some respects Thai resembles French (e.g. path expression by a main verb, #1), in others Swedish (e.g. manner expression by a main verb, #2), while in others neither (e.g. the possibility to have path in the scope of negation, #6), cf. Zlatev and David (2003) for more discussion.

**Table 1.** Comparison of French, Swedish and Thai with respect to 9 characteristics related to the expression of translocation, summarizing the argument for Thai representing a “third type” (based on Zlatev and David 2003)

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>FRENCH</th>
<th>SWEDISH</th>
<th>THAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Path</td>
<td>Verb</td>
<td>Satellite</td>
<td>Verb</td>
</tr>
<tr>
<td>2. Manner (with boundary crossing)</td>
<td>Adverb</td>
<td>Verb</td>
<td>Deictic verb</td>
</tr>
<tr>
<td>3. Deixis only</td>
<td>Verb</td>
<td>Deictic PP</td>
<td>Manner adverb</td>
</tr>
<tr>
<td>4. Deixis + Path</td>
<td>Path verb</td>
<td>Deictic verb</td>
<td>Path satellite</td>
</tr>
<tr>
<td>5. Deixis + Manner</td>
<td>Deictic Verb</td>
<td>Manner verb</td>
<td>Deictic adv</td>
</tr>
<tr>
<td>6. Negation focus</td>
<td>Manner</td>
<td>Manner</td>
<td>Path or Manner</td>
</tr>
<tr>
<td>7. Manner-V + boundary crossing?</td>
<td>No</td>
<td>Manner verb</td>
<td>Path satellite</td>
</tr>
<tr>
<td>8. Several Paths in a single clause</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>9. Manner+Path conflating verbs</td>
<td>≈ path-V</td>
<td>≈ manner-V</td>
<td>separate category</td>
</tr>
</tbody>
</table>

But perhaps more troubling for the Talmian typology than the empirical problems, have been unresolved conceptual and definitional issues, such as the following:

3
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 motion trajectory? And how does this relate to the concept of direction of motion?

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?

What is a “co-event”, is it really an event and does it always pertain to information related to the “manner” of “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, say, 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 apparently aware that his initial definition of a “Motion event” needs further specification, since he points out repeatedly 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 of ‘average’ location” (Talmy 2000: 35) and emphasizes that the typology concerns motion only of the first kind. However, 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 in an “alternative model”, that is claimed to depart from conceptual analysis, rather than semantic analysis, as in the case of 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 as argued that:

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1 Zlatev (2005) refers 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, in a way similar to in this chapter.
there 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 not longer PATH, but MANNER. (ibid: 154).

In general, this proposal is quite reasonable, though hardly to the extent of claiming that the “core schema” in activity representations is MANNER – since this implies stretching the boundaries of the concept “core schema” far beyond what Talmy (2000) intended. 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 (or, as we prefer, processes – see Section 3), though the latter are not presented as being “in progress”.

In line with this conceptual unclarity, 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” (ibid: 154), illustrated in the English example (4) and the French examples (5) and (6):

(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 bordes de la rivière.
    Marc goes along the river banks.

What is it that brings Pourcel (2005) to group these as examples of “events” along with (2) rather than along with (3), which, note, even includes the so-called AROUND path? We believe that the reasons are two. First, Pourcel (2005) does not really remain true to her intention to provide a “conceptual analysis”, but is very much influenced by the “grammatical features of motion event encoding in French” such as that “PATH information is obligatory … in the main verb” (ibid: 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 confuse 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” (ibid: 181, our emphasis) – even though the examples in question seem to lack any expression of a change-of-state, which for us – as for many others – is the mark of eventhood.

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.

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2 The original examples in Pourcel (2005, Chapter 5) are respectively (6), (90) and (92).
To anticipate, according to our classification, examples (4)-(6) end up as *translocative processes*, together with (2), while (1c) and (3) are (representations of) *translocative events*. On the other hand, (1a) and (1b) are neither, but rather *non-translocative processes*. Since we define Path as always related to Source, Route or Goal – only translocative events involve Path, while processes contain the category Direction or Location. Thus we can reformulate the famous “boundary-crossing constraint” (Slobin 1997: 44) as follows: a *manner-verb can co-occur with an expression of Direction or Location, but not (or less readily) with Path in the same clause*. Assuming that French, as most V-languages, obeys this constraint, Pourcel’s examples (40a) and (41a) along the lines of Aske (1989) – given below as (7) and (8) – can be straightforwardly explained (or at least described):

(7) Nous avons marché *le long de la plage.*  
We walked along the beach  
MANNER DIR

(8) Nous avons marché *dans la pièce.*  
We walked in the room  
MANNER LOC/*PATH

*‘We walked inside the room.’*  
*‘We walked into the room.’*

At the same time, notice that we formulated the constraint rather as a (strong) *preference*, so we should expect some exceptions to it, such as those noted by Pourcel (2005) and Pourcel and Kopecka (in press). This reformulated constraint will play a role in the interpretation of our results in Section 5.

### 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 a 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. In this perspective motion is “in the eyes of the beholder”. Note, however, that self-motion “from A to B”, i.e. *relocation* (Smith 2003, in press) is not a necessary characteristic of a motion situation. First, the light could waver around the A position, and then there would be no change in “average position” and thus only “self-contained” motion in Talmi’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.
3.1. Translocative vs. non-translocative motion

As stated in the introduction, *translocation*, similar to but more transparent than Talmy’s term “translational motion” (cf. Zlatev and Yangklang 2004) is defined as *the continuous change of an object’s average position according to a spatial frame of reference*. Example (1c) is therefore a case of translocative motion, while (1a) and (1b) represent non-translocative motion. The reference frames 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 the reference frame is in order to determine the type of motion. If the same external state-of-affairs described in (1b) was portrayed as (9), then the (conceptualized) situation would be translocative, involving the change of the figure’s location with respect to both the “end of the park” and the viewpoint of an imaginary observer.

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

In general there are three types of spatial *frames of reference* (FoR) (cf. Zlatev and David 2003; Zlatev 2005; for a related account cf. Levinson 2003), and in examples (10)-(12) it is illustrated again how the same state-of-affairs can be experienced – and described – quite differently.

(10) *He is going to the top of the hill.* Object-centered FoR
(11) *He is going uphill.* Geocentric FoR
(12) *He is coming this way (myself being on the top of the hill).* Viewpoint-centered FoR

While all three examples involve translocation, (11) and (12) do not specify the change of position in relation to a beginning (Source), middle (Route) or end (Goal) point, but rather with respect to a system of geo-centric coordinates (11) and a deictic center (12). Thus following the analysis presented in earlier work (e.g. Zlatev 2003, 2005), we will state that only (11) involves the category Path, understood in the schematic sense (cf. footnote 1), while (11) and (12) express the related but different category of Direction. The crucial difference is that Path implies *bounded motion*, while 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 Route, or reach a Goal (as in 10) – 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 (11) and (12), or as in the earlier given (4)-(7). Following terminology that is fairly standard in the “situation type” literature, we will refer to situations of bounded motion as *motion events*, and to unbounded motion situations as *motion processes*. This is, we believe, preferable to the term “activities” (used by e.g. Durst-Anderson 1992; Pourcel 2005), since the latter usually implies human agency, while even (13) expresses a motion process.

(13) *Raindrops are falling down.*
Note furthermore, that there is independence between the two parameters discussed so far. We have seen how translocative situations can be either bounded (events) – e.g. (9) and (10) – or unbounded (processes), e.g. (11) and (12). But 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 (14) or the Swedish equivalent (15).

(14) *The machine broke (down).*
(15) *Maskin-en gick sönder.*
    Machine-DEF go-PAST broken

One might counter that (14) and (15) do not express, but rather presuppose motion, but since machines are by definition (self-)moving artefacts, these seem to us good examples of representations of a non-translocative bounded motion situation.

### 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, the relevant notion of causality concerns the (naïve) human lifeworld, and not our scientific understanding of the universe. Thus, the situation described in (13) above is one of “self-motion” even though the motion of the raindrops is caused by gravity. On the other hand, (16) clearly represents a (translocative, bounded) caused motion situation.

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

This parameter is likewise independent of the other two, so it is possible to have caused translocative processes (17), non-translocative events (18), and non-translocative processes (19). The self-caused correspondences to these have already been illustrated.

(17) *He pushed the car forward.*
(18) *He tore the paper up.*
(19) *She waved the flag.*

### 3.4. Summary

The independence of the three parameters yields the 8 types of motions situations illustrated in Table 2, with schematic representations in English.

<table>
<thead>
<tr>
<th></th>
<th>Self motion</th>
<th>Caused motion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Translocative-Event</td>
<td>F goes to G</td>
<td>A throws F into G</td>
</tr>
<tr>
<td>Translocative-Process</td>
<td>F falls (with respect to G)</td>
<td>A pushes F forward (with respect to G)</td>
</tr>
<tr>
<td>Non-translocative-Event</td>
<td>F breaks</td>
<td>A breaks F</td>
</tr>
<tr>
<td>Non-translocative-Process</td>
<td>F waves</td>
<td>A waves F</td>
</tr>
</tbody>
</table>

The tense in the examples in Table 2, the present simple, is only seldom used with any of these situation types (constructions) in English, e.g. to express habitual meanings, as in (20).
However, it was intentionally used in the cells in Table 2 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) the satellite (or preposition) and (c) the grammatical construction (e.g. intransitive vs. transitive). While tense and aspect markers can make the distinction between e.g. events and processes even clearer, i.e. by rendering the events in past simple as in (14), and the processes in present continuous as in (13), 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)-(c), by allowing the profiling of situations either as ongoing or as completed – whether they are inherently bounded or not. Thus, (21) is no less a representation of a bounded event (despite ongoing), and (22) no less a representation of a process (despite being “in the past” and thus completed).

(21) Marry is going to school.
(22) He fell (and fell).

The conceptual framework described in this section and in particular the contrast between self-motion translocative events and processes (the 2 top-left cells in Table 2), is highly relevant for our empirical studies involving language and translocation described in Section 5. But prior to that, let us look at some of the recent research on how different languages can, possibly, affect the experience of motion in a way that “colors” 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 (ibid: 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” (ibid: 75) and is therefore weaker that Whorf’s (1956) notion of “habitual thought”, according to which language should have much more pervasive effects. Also 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 1, Section 2), their speakers were found to express Manner less often and prefer to give more static descriptions in which the Figure’s motion can be inferred from the “scene setting” and the result of the motion, while S-languages induce to more active descriptions, with more vivid representations of the Path. But, as for example pointed out by Pourcel (2005), Slobin’s research gives little support that
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 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. An exception to this line of reasoning was offered by Papafragou, Masely and Gleitman (2002), who also 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 (for whatever reason), 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 et al. (2002) compared among other things the categorization of triads (using static pictures) by speakers of Greek (a V-language) and English (a 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 using the same method, but using triads of dynamic (video-clip) representations have given different results. Finkbeiner et al (2002) compared English (S-language) with Spanish and Japanese (V-language) 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” (ibid: 454).

Gennari et al. (2002) compared speakers of the two prototypal languages for Talmy’s two types, English and Spanish, and established no clear difference between the groups when the represented situations where 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 seems to offer 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 translocative events and translocative processes described in Section 3 gave different results: there was a strong Path bias for the events (“telic Path”), but this bias was neutralized, and with linguistic
description even substituted with a Manner-bias for the processes (“atelic Path) (cf. Pourcel 2005: 243-245). Finally, an important difference compared to the Finkbeiner et al. (2002) study 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 et al. (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 agree that this design (similar to that of Finkbeiner et al. (2002) has a considerable advantage: it contrasts Manner and Path (or 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”.3

The foremost strength of the study of Bohnemeyer 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, Bohnemeyer 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 Ground object: 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 Ground 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 a translocative process (moving upward or downward) and a translocative event (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 translocative events and processes differed, implying the cognitive relevance of this distinction. However, the biases in the two studies were converse: stronger preferences for same-Path categorization for processes than events in

3 One thing to be born 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 figure, so that the results produced using this stimulus tool cannot be directly compared with results obtained using another tool (cf. Kopecka and Pourcel 2005).
the Bohnemeyer et al. (ms) study and stronger preferences for same-Path categorization for events than processes in that of Pourcel. 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 Bohnemeyer 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.

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 (Bohnemeyer, 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 a 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 2. The tool includes 72 such different triads, “distributed across 6 randomized presentation lists in a Latin-square design” (Bohnemeyer et al. ms), where each list was presented to two participants, in reverse order.
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 2), using the terminology introduced in Section 3:

- 4 translocative events, horizontal motion, from Ground$_1$ to Ground$_2$ (*FROM/TO Path*)
- 4 translocative events, horizontal motion, out-of Ground$_1$ into Ground$_2$ (*OUT-OF/INTO Path*)
- 4 translocative processes, vertical motion, up (or down) Ground (*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 (for a “tomato”) and it was expected that there will 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 (see Table 1 in 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 experiments were carried out during 2003-2004. The procedure was the
following: each participant was given three practice trials, followed by the test 50 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 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-OF/INTO. 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 3 and 4. Contrary to our expectations, it was not the Swedish, but the Thai group that had the largest proportion of Same-Manner choices, and furthermore, the difference between the Thai and French groups was statistically significant, while that between the Swedish and either the French or Thai group was not.

![Figure 3](image)

**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-OF/INTO and VERTICAL. As can be seen in Figure 4, the French group differed significantly from the other two with respect to the classification of the Vertical translocative processes. 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 – which was significantly different from the groups’ behaviour for the other two different types of stimuli, as well as from the other two groups for this situation type.

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4 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.
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 evidence for two such correlations. Table 3 displays all the verbs (types and tokens) in the French descriptions, divided by the categories Vertical Path (or Direction), Horizontal Path (FORM/TO + OUT-OF/INTO), Manner and Other. In absolute number of tokens there 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 (in press) show, French involves several types of constructions were Manner is expressed by the main verb (see also below). More relevant for our purposes, however, was that fact that the Direction verbs, above all monter and descendre were relatively more frequent than the Path verbs: remember that 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-OF/INTO) stimuli.

<table>
<thead>
<tr>
<th>DIRECTION</th>
<th>PATH</th>
<th>MANNER</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>MONTER (ascend): 18</td>
<td>SORTIR (exit, go out): 23</td>
<td>ROULER (roll): 54</td>
<td>ALLER (go): 81</td>
</tr>
<tr>
<td>DESCENDRE (descend): 15</td>
<td>RENTRER (enter/come back home): 23</td>
<td>PIVOTER (pivot, revolve): 1</td>
<td>FAIRE UN DÉPLACEMENT (make a move): 1</td>
</tr>
<tr>
<td>GRAVIR (climb, struggle up a slope): 1</td>
<td>TRAVERSER (cross): 6</td>
<td>FAIRE DES GALIPETTES (somersault): 1</td>
<td>SE DÉPLACER (move): 7</td>
</tr>
<tr>
<td>DÉVALER (tumble down): 1</td>
<td>PASSER (pass, go through): 2</td>
<td>TOURNER (turn, spin): 14</td>
<td>S'ARRÊTER (stop): 8</td>
</tr>
</tbody>
</table>

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 translocative event (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 translocative processes (Direction), in 27 out of the 28 cases which also included an expression of Manner, the latter was expressed in the same clause, as in (23). In only 1 case out of 28 (3.5%) was Manner expressed in an additional clause.

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

What this could be attributed to is the relatively higher difficulty of encoding both Path and Manner in the same clause, as opposed to Direction and Manner, which may lead to Manner being expressed separately, 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. 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.

Notice that this also helps explain the high proportion of Manner verbs produced by the French group in Table 3.
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, however, subjected to more thorough analysis.

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-Path/Direction choices. Furthermore, in dividing the Vertical stimuli in two groups depending on the direction of motion (24 each), it turned out that in the case of UPWARD motion the ratio between same-Manner and same-Path/Direction was even, in the case of DOWNWARD motion, there was a strong preference for same-Path/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: Path+Manner in the same clause, Path & Manner in different clauses, Path only, Manner only and Other, and each one of these was crossed with the four situation types (OUT-OF/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 translocative events, and especially for FROM-TO, was that of Manner only, that for the translocative processes, and especially for Vertical-DOWN was that of Path+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-OF/INTO stimuli (49,2%). On the other hand, only a small minority of Vertical stimuli (16,7% and 20,8%) lacked Path (or rather Direction, see below). 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

<table>
<thead>
<tr>
<th></th>
<th>Path+Manner (same clause)</th>
<th>Path &amp; Manner (diff. clauses)</th>
<th>Path only</th>
<th>Manner only</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUT-OF/INTO (Tot: 120)</td>
<td>15 (12,5%)</td>
<td>35 (29,2%)</td>
<td>11 (9,2%)</td>
<td>41 (34,2%)</td>
<td>18 (15%)</td>
</tr>
<tr>
<td>FROM/TO (Tot: 48)</td>
<td>1 (2,1%)</td>
<td>6 (12,5%)</td>
<td>2 (4,2%)</td>
<td>31 (64,6%)</td>
<td>8 (16,7%)</td>
</tr>
<tr>
<td>VERT-UP (Tot: 24)</td>
<td>11 (45,8%)</td>
<td>3 (12,5%)</td>
<td>6 (25%)</td>
<td>4 (16,7%)</td>
<td>0</td>
</tr>
<tr>
<td>VERT-DOWN (Tot: 24)</td>
<td>14 (58,3%)</td>
<td>3 (12,5%)</td>
<td>2 (8,3%)</td>
<td>5 (20,8%)</td>
<td>0</td>
</tr>
</tbody>
</table>

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” expression, particularly in the same clause. Admittedly this is 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 they represented situations which were more readily interpreted as (unbounded) processes, rather than (bounded) events. Remember that according to our redefinition of the “boundary-crossing constraint” (Section 2) it is above all the “eventhood” (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 translocative events than translocative processes. On its side, this could increase its semantic salience, 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 eventhood”: 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 event-like, and most process-like situation in the set. Thus we are lead to a tentative generalization (and prediction): The more event-like a situation, the more salient Manner will be for speakers of a V-language – if language mediates the categorization process.

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 noted, 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 an event/process 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 events than for the processes (which probably explains her reaction to our interpretation). 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 2 groups of 12 Swedish subjects participated: Group 1 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 competed, 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 natural language use.

The results were highly interesting. Whereas the similarity judgments for Group 1 (post-choice description) were similar to those in Study 1, i.e. a preference for same-Manner choices (albeit a weaker preference, cf. Figure 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 5.

![Figure 5](image)

**Figure 5**: Total results of same-Path/Direction vs. same-Manner preference for Group 1 (post-choice description) and Group 2 (pre-choice description). Total number of choices is 144 per group. Native language for both groups was Swedish.

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 for Group 1 and the previous results: in the case of VERTICAL the Manner-bias was neutralized, see Figure 6.
Figure 6. The results for the two Swedish groups, divided by the three different situation types: OUT-IN, 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 snurra (‘spin’) and adverbials such as snurrande (‘rolling’), Path expressions such as från (‘from’) and till (‘to’) and Direction expressions such as upp (‘up’) and ner (‘down’) and looked for correlations between the presence of these elements and the choice of the subjects. Interestingly there were no significant correlations for Group 1, and none for Manner for both groups, but there were two significant correlations for Group 2: (a) if a subject had used a Direction expression, he was more likely to make a same-Direction than same-Manner choice and (b) if a subject had used a “out-of/into” expression, he was more likely to make a same-Path than a same-Manner choice.

Combined, these results offer rather strong support for a linguistic effect on the categorization of motion situations – when the situations are described prior to the similarity judgment task. But at the same time, this effect does not lend itself easily to explanation in terms of Slobin’s (1996) thinking-for-speaking hypothesis, since according to the latter, and the classification of Swedish as an S-framed and (thus) Manner-salient language, one would rather have supposed the opposite effect: a stronger Manner bias in Group 2, rather than Group 1. Given the correlation results, it seems rather that it is the explicit verbalization of Path or Direction that contributes to the same-Path/Direction choice, and Swedish allows clearly such verbalization through its satellites and prepositions, and the irrelevance of the “boundary-crossing constraint” (see Table 2, Section 2). On the other hand, if our results for Path verbalization in a V-language such as French reported earlier would also hold for pre-choice description as in Group 2, then we would expect Path to be expressed less often than Manner (in translocative events) and thus we can expect a less prominent same-Path bias than for Swedish. This at first sight “counter-intuitive” prediction is to be explored in the near future.

However, an indication that the results cannot be explained solely through linguistic differences and effects is the neutralized Direction-Manner bias in the case of the translocative process (VERTICAL) situations. Unlike the case with French in Section 5.2, this cannot be explained by a linguistic effect since (a) Swedish does not obey the boundary-crossing constraint and (b) there was no pre-choice description in this case and no description-choice correlation. The asymmetry in the choices between VERTICAL and the other two types of stimuli thus corroborate our claim in Section 3 that translocative processes and
translocative events 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
of translocation, rather than to explicit “parsing” of the translocative event in terms of Source
and/or Goal. Like Manner, thus 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

6. Discussion: From linguistic relativity to linguistic mediation

The influential Soviet psychologist Lev Vygotsky (1896–1934) distinguished between
“higher” and “lower” mental functions, described by Kozulin (1986: xxv) as follows:

Vygosky […] 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 these become internalized and thus intra-personal. Importantly, Vygotsky argued that such internalization
occurs via so-called “egocentric speech” in early childhood, and established that such speech
is highly functional for the child, since its presence increased 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 the results reported in the literature.
First, due to the nature of 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 though less mediated
processes, should bias for Manner than Path, and vice versa. We can thus explain the results
of Study 3 through a possible “Vygotskyan 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 given components such as Manner (or Direction). Such an effect can be
independent of different languages, but rather a result of linguistic mediation as such. If our
future experiments with the modified Event Triads tool find essentially the same pattern as
that in Figure 5 in typologically different languages such as French, this would lend support
to this explanation.

On the other hand, 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 (short term) memory, which was indeed the case.

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 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 increased for the “atelic Path” (i.e. Direction) situations, since this goes against the generalization proposed at the end of Section 5.2, i.e. that less event-like situations can more easily be described by a single clause in a V-language such as French, without the need to express Manner in a separate clause, and should therefore decrease attention to Manner. However, the divergent results can perhaps been explained by the marked difference in the nature of the stimuli: whereas the relevant kinds of Manner in Pourcel’s experiment were mostly “default” and thus less-salient, those in our study and that of Bohnemeyer et al. (ms or 2001?) were all attention-grabbing, biasing categorization both based on perceptual processes, and on linguistically-mediated processes in the case of a V-language. Again, this can be empirically tested by applying the design of our Study 3 to a French-speaking population.

Finally, another type of study for investigating the role of linguistic mediation is suggested by recent developments in understanding the differences in cognitive performance between high-functioning (HF) and low-functioning (LF) children with autism, as well as both groups and children with typical development. Using a number of studies of color and picture categorization Pam Heaton and colleagues (Heaton, Ludlow and Roberson in press; Jarvinen and Heaton in press) show that HF autistic children seem to rely more on language in apparently perceptual judgments than even typically developing children, while LF autistic children are, as familiar from previous studies, more bound to perceptually “lower-level” features. Assuming that this is so, we would expect HF autistic children to perform more like Group 2 in the present study, even without explicit verbal description, while LF autistic children should do the reverse, and be more like Group 1, even when asked to describe the situations (to the extent that they are capable of doing so). If true, this would furthermore support our claim that at least some forms of Manner constitute a “low-level” feature, while Path is a much more abstract one, with Direction being somewhere in between, but close to Manner.

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 undoubtable contributions of scholars such a Talmy and Slobin, it is time that we move beyond, 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 to be 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 (“code”) 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 => different worldviews”).

We have also argued that we should also 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 “Vygotskyan” 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 and autistic children 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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