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## **Recent advances in the study of motion in French:**

### **A survey<sup>\*</sup>**

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### **1. Dynamic space in language and cognition**

As temporal research much earlier, and after decades of sporadic studies (e.g. Cooper 1968; Leech 1969), spatial semantics emerged as an autonomous field of research within linguistics in the early 1980s. This period was marked by the publication of several major studies (e.g. Herskovits 1982, 1986; Talmy 1983; Vandeloise 1984, 1986) that greatly contributed to enhancing and strengthening the emerging domain. These analyses all shared the aim of relating the linguistic expression of space to the cognitive representations it may be associated with. Directly relating spatial configurations out there to linguistic productions is not accurate, it was claimed, and what has to be understood is which aspects of spatial arrangements cognition picks out (and in what way) in order to build representations that are consistent with locative expressions in language(s). Thus, linguistic research is a good way to access some spatial representations hosted by our minds/brains —those related to

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\* This book is dedicated to Andrée and Mario Borillo, in recognition of the major role they played in the development of research on the semantics of space and time in France since the mid-1980s. Their desire to foster collaboration between descriptive, formal and experimental researchers proved to be a visionary intuition and this approach is still relevant today, as this book tries to show.

language(s)— and to articulate them to information provided by other perceptual modalities (sight, action and touch, hearing, proprioception, etc.; cf. Jackendoff 1996). Because spatial semantics is not reducible to an “objective” space, external to the speaker, and relies heavily on our cognitive representations of external “reality”, it is customary to speak of *space in language and cognition* that is to say space as *represented* in language and cognition.

Among these spatial representations, one can distinguish static ones where the underlying configurations are motionless from dynamic ones where the relationships between entities evolve. We can thus speak of static vs. dynamic space in language and cognition. In many languages, spatial descriptions, be they static or dynamic, involve minimally three main ingredients: a located entity usually called “target” (Vandeloise 1991), “trajector” (Langacker 1987) or “figure” (Talmy 1983); a locating or reference entity usually called “landmark” (Langacker 1987; Vandeloise 1991) or “ground” (Talmy 1983); and a spatial relation between these two entities. For static descriptions, the relation is often expressed by a copula, a general static predicate, a posture verb or a positional, usually combined with an adpositional element applied to the noun denoting the landmark (Grinevald 2006; Kelly and Melinger 2001; Levinson and Wilkins 2006). For dynamic descriptions, different degrees of dynamicity can be distinguished, from changes of posture to motions or displacements introduced by one or more verbal and adpositional elements (again applied to the landmark noun). Obviously, this pattern is not unique and spatial constructions in languages of the world can vary along many dimensions (see e.g. Levinson and Wilkins 2006). When they are present in a description, however, targets (or trajectors, figures) and landmarks (or grounds) display strong contrasts as the latter are larger, more salient, and more stable than the former, among other things. These contrasts should remind us that the main purpose of spatial descriptions is to *locate* a target with respect to a landmark (see, for instance, the notion

of “search domain” of a target or trajector in (Langacker 1987)), a point which is often forgotten when dealing with *dynamic* spatial descriptions in language.

Dynamic space and more specifically the expression of motion is, precisely, the main topic of this book. Motion markers and constructions have given rise to an extensive literature in the last twenty or thirty years. Some studies examining the syntax-semantics interface have focused on motion descriptions in order to tackle more general phenomena, among which Aktionsart or inner aspect (telicity vs. atelicity) and unaccusativity vs. unergativity (e.g. Krifka 1995; Levin and Rappaport Hovav 1992, 1995; Tenny 1995; Tenny and Pustejovsky 1999). Concomitantly, a whole body of literature has grown up around the expression of motion itself, either on specific languages or from a more cross-linguistic perspective (e.g. Aske 1989; Berman and Slobin 1994; Bowerman et al. 1995; Creissels 2006; Grinevald 1994; Hickmann 2006; Slobin 2003; Stosic 2002; Talmy 1985, 2000; Vulchanova and van der Zee 2012). Studies on French have not remained on the fringe of these developments and show an interesting historical background in this domain, which we will come back to later (e.g. Asher and Sablayrolles 1995; Boons 1987; Guillet and Leclère 1992; Kopecka 2006; Lamiroy 1983; Laur 1991; Sarda 1999; Stosic 2007).

This major research trend has made a significant contribution towards a better knowledge of the meaning components that languages use to describe motion, and a better identification of the morphological, lexical and syntactic means that convey these semantic features. Many new terms and conceptual tools were coined as a result, such as: manner of motion, directed motion, change of location/place, boundary crossing, direction, vector, path, trajectory, source/departure (initial), goal/arrival (final), traversal (medial), etc. However, these terms and concepts are not always given a precise definition and, when they are, significant variations appear from one author to another. For instance, while Jackendoff (1983, 1990) applies the term

“path” to the *motion* carried out by a target (or trajector, figure), with several subcategories of paths being distinguished (bounded paths, unbounded paths or directions, routes...), Talmy (2000, vol. 2: 25) defines this meaning component of spatial events as “the path followed or *site occupied* by the Figure object with respect to the Ground object” (our emphasis), thus grouping together static and dynamic situations. Even the same author’s definition of a term or concept can become distorted or misunderstood when taken up by other scholars. For instance, whereas Talmy’s “vector component” of a path makes it possible to distinguish between several kinds of paths (static paths, dynamic paths and among them bounded and unbounded paths), the success of the path vs. manner opposition has often resulted in a rather fuzzy use of the former concept —without the latter one (manner) being correctly delimited either.

## **2. Analyzing dynamic space in French: a longstanding line of research**

The main aim of this book is to draw up an overview of recent research on the semantics of dynamic space in French, without any claim to exhaustiveness. It is intended for both scholars and advanced students wishing to have access to results and reflections about the expression of motion in French. More generally, it deals with several important topics of motion description in language and offers an immersion in this research field with French as a guiding thread. Similar volumes on static or dynamic space have been recently published for other languages and language families (e.g. Hasko and Perelmutter 2010; Šarić 2013; Stolova 2015; Xu 2008). Their interest does not merely lie in the application of existing theoretical frameworks and questionings to the language(s) under examination. The specificities of the data studied are likely to generate new issues and questions and even to challenge existing theoretical frameworks and concepts which, as

we tend to forget, were themselves often influenced by the language(s) on which the analysis was based (often English). Moreover, although focused on a particular language (or language family), this kind of publication does not preclude comparisons with data from other languages, quite the contrary. This is the case of several of the chapters in this book which include cross-linguistic references or adopt a clear cross-linguistic perspective.

In French, research on spatial semantics was strongly boosted by the publication of Vandeloise's book *L'espace en français* in 1986. This study and its translation into English (Vandeloise 1991) deeply impacted the linguistic field (beyond France and French-speaking researchers) by claiming that the semantics of spatial relations in language cannot be reduced to geometrical constraints but is highly dependent on "functional" aspects of entities and the world, such as: anthropomorphic principles/form of the human body, naive physics (in particular force dynamics), access to perception, potential encounter, or general and lateral orientations. Vandeloise specified that he used the term functional "in the sense of utilitarian" (Vandeloise 1986: 31 note 7, 1991: 239 note 6): "[...] the conceptualization of space involved in language is not a static topological or geometrical representation, but rather a dynamic representation linked to the *use of space that hosts our daily experience in the world*" (our emphasis; Vandeloise 2006: 153).<sup>1</sup> At the same time, Vandeloise proposed a full-fledged framework for capturing the functional meaning of spatial prepositions (Langacker 2010), a framework that he subsequently used throughout his extensive production.

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<sup>1</sup> Vandeloise argued that many static configurations are dynamic as forces apply to them. Situations involving movement or motion are said to be "kinetic". In this book, we will not take up this terminology but will adopt the usual opposition between static and dynamic localization.

However, interest in the expression of space in language had already been perceptible for quite some time in French linguistics, specifically within the theoretical approach of “lexicon-grammar” launched by M. Gross (1975).<sup>2</sup> From the first publications on intransitive constructions by Gross’s collaborators, special attention was paid to locative verbs and constructions—see, for instance, tables 35L and 35ST in (Boons et al. 1976: 216–242, 333–342)—which later resulted in a series of studies focusing explicitly on motion predicates (e.g. Boons 1985, 1987; Guillet and Leclère 1992). Among the many phenomena highlighted by these authors, it should be noted that they were among the first to point out that some motion verbs and constructions were likely to give rise to a static interpretation (see table 35ST in (Boons et al. 1976)), a phenomenon widely commented on since then and often known as “fictive motion” (Talmy 1996, 2000) —also called “virtual motion” (Talmy 1983; Langacker 1999), “subjective motion” (Langacker 1986), “abstract motion” (Langacker 1986) or “non-actual motion” (Blomberg and Zlatev 2014). Another very important issue in the lexicon-grammar approach (see e.g. Boons 1987) consisted in differentiating dynamic verbs denoting simple “movement” (*mouvement*) such as *s’asseoir* ‘to sit down’, *s’étirer* ‘to stretch’ or *se (re)tourner* ‘to turn over, turn round’ (changes of posture), from verbs referring to a motion or “displacement” (*déplacement*) such as *arriver* ‘to arrive’, *foncer* ‘to tear along’, *marcher* ‘to walk’ or *se rendre* ‘to go to’. This opposition between movement vs. motion or displacement can be minimally traced back to Tesnière (1959: 307-310)<sup>3</sup> and it is still central in

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<sup>2</sup> Most of the research on lexicon-grammar was conducted in the former LADL lab in Paris, from the 1970s to the 1990s.

<sup>3</sup> However, in Tesnière (1959) this distinction is quite different from more recent work on dynamic space in French and it mainly aims at introducing subcategories within verbs and events that are now regarded as belonging to the (macro-)category of motion or displacement (Aurnague 2011; Boons 1987). Tesnière’s goal was to

research on dynamic space in French, perhaps because of the encoding of the path component of motion in the verb (a “verb-framed language” in terms of Talmy’s (1985, 2000) typology). As we will see throughout the following chapters, it led to further distinctions being made within the categories of movement vs. motion/displacement and to a finer-grained picture of paths and trajectories. Together with Vandeloise for static space, the lexicon-grammar had a major impact on the development of research on dynamic space and motion in French and generated several important studies, in particular on the initiative of A. and M. Borillo in Toulouse (e.g. Asher and Sablayrolles 1995; Borillo A. 1998: 37–50, 131–152; Borillo M. and Sablayrolles 1993; Laur 1991, 1993; Muller and Sarda 1998; Sarda 1999; Stosic 2001, 2002).

Over the last twenty years, and cross-cutting the work on stativity and dynamicity, studies on spatial semantics in French have taken special care to delimit the ontological nature of the landmark entities denoted by the nominal elements that propositions and verbal units select. This particular concern was initially guided by the detailed analysis of prepositions such as *dans* ‘in’ (Vandeloise 1986; Vieu 1991), *à* ‘at’ (Aurnague 2004, 2009; Vandeloise 1987, 1988) or *par* ‘by’ and *à travers* ‘through’ (Stosic 2001, 2002) and it led to distinguishing several kinds of spatial entities: objects, locations/places, mixed entities (buildings, houses), material entities, space portions, substances, pipes (a subcategory of objects), roads (a subcategory of locations/places), etc. The convergent behavior of proper names of

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draw a line between verbs of “change of placement” (in particular atelic verbs of manner of motion: e.g. *foncer* ‘to tear along’, *marcher* ‘to walk’, *ramper* ‘to crawl’) and verbs of “change of relation and placement” (strict motion: e.g. *arriver* ‘to arrive’, *partir* ‘to go (away), to leave’, *se rendre* ‘to go to’), —see Aurnague’s chapter in this volume. In so doing, he was a true precursor as he spotted the opposition between verb-framed (French) and satellite-framed languages (German) that would later become famous in the wake of Talmy’s observations (see also Bally 1932/1965: 349–351).



geographical locations and relational spatial nouns (also called “Internal Localization Nouns” in French) with respect to locative adpositions and cases has been often noted in the literature (see e.g. Burenhult and Levinson 2008; Cablitz 2008; Hill 1996) and it also shows itself in French through the locating use of the preposition *à* ‘at’ (Vandeloise 1987, 1988). This behavior was given a unified explanation through the “abstract” notion of location/place and the possibility of defining objects contrastively (Aurnague 2004, 2009). Part-whole relations is another crucial aspect that has to be dealt with in relation to the ontological nature of spatial entities in language and cognition (Aurnague and Vieu 1993; Vieu 1991; Vieu and Aurnague 2007; Winston et al. 1987). A collective volume has been dedicated to these issues in the present series of John Benjamins (Aurnague et al. 2007) with data from French and other languages. Although these ontological concerns were mostly applied to static spatial relations, they need to be transferred to the dynamic domain with, for instance, the following questions to be answered: are motion verbs sensitive to the location/place vs. object distinction as suggested by the expression *changement de lieu* ‘change of location/place’ that is widely used in the literature? or could it be the case that the term *lieu* is used here in a very loose way (without any precise definition) and simply stands for landmark (or ground) so that what is really meant is a change of landmark or a change of relation with respect to a landmark? This type of question is far from trivial for a serious analysis of dynamic space to be carried out, in French as well as in other languages.

This brief survey of research on spatial semantics in French over the last few decades is evidence of a growing interest in the study of the linguistic means and strategies available in this language when encoding spatial information. The present volume aims to bring together some recent findings in the field of dynamic space and to show how these cumulative, in-depth studies of French data can increase our general understanding of the way motion is processed in language and cognition.

### 3. Scope of the book

For the sake of consistency and efficiency, the issues raised in the different chapters of the book mostly concern the description of “autonomous” or “spontaneous” motion (e.g., *Max est parti de la salle d’audience* ‘Max left the courtroom’), as opposed to explicitly “caused” motion (e.g., *Les policiers ont emmené Max* ‘The police officers took Max away’). As regards the predicates involved in particular, this kind of spatial situation is expressed by a fairly large range of verbs, whether intransitive (e.g. *foncer* ‘to tear along’, *marcher* ‘to walk’, *ramper* ‘to crawl’), “indirect” transitive (e.g. *arriver* ‘to arrive’, *partir* ‘to go (away), to leave’, *se rendre* ‘to go to’), or “direct” transitive (e.g. *atteindre* ‘to reach’, *quitter* ‘to leave’, *traverser* ‘to cross’).

The material thus delimited is analyzed from a threefold perspective articulating *descriptive*, *experimental* and *formal* approaches to motion in language. Together with its focus on French, this is undoubtedly another specificity of this volume. French is only a testing ground in this respect, and we are convinced that combining analyses and methods from descriptive/functional linguistics, psycholinguistics, cognitive psychology, formal semantics, the philosophy of language or Natural Language Processing is a good way to create the conditions for the enrichment and refinement of each kind of analysis in the studied field. Psycholinguistics and cognitive psychology, for instance, need strong descriptions of linguistic facts to be available, in order to formulate hypotheses and design experiments (Nespoulous 1990). The same can be said of Natural Language Processing, at least when it is based on symbolic tools and deep (i.e. not shallow) knowledge about linguistic meaning. And of course, descriptive and formal linguists expect feedback from these different disciplines. While only some of the above-mentioned disciplines are included in the present series of chapters (descriptive and formal linguistics, psycholinguistics and cognitive psychology, Natural Language Processing), we believe that this minimal

“platform” is sufficient to illustrate the advantages of multiple and complementary spotlights on dynamic space in language(s). A similar multidisciplinary approach was followed in (Aurnague et al. 2007) when searching for the categorization of spatial entities in language and cognition.

The book has been divided into four parts (and ten chapters) that reflect the complementary points of interest and methodologies according to which the semantic analysis of autonomous motion has been carried out: Arguments, modifiers, asymmetry of motion (Part I); Manner of motion and fictive motion (Part II); Psycholinguistic issues (Part III); Formal and computational aspects of motion-based narrations (Part IV). The following sections introduce and summarize the contents of each of these parts.

### *3.1. Arguments, modifiers, asymmetry of motion*

A first set of issues has to do with the semantic and syntactic relationships between the verb and the possible adverbials or adpositional elements appearing in motion descriptions. In particular, the syntactic function of locative PPs deserves to be examined carefully in order to determine their status of complement vs. adjunct. In diachrony, what traces do we have of previous satellite-like adverbials of French and the way they were replaced by constructions involving a verb and a locative adposition? The semantic contribution of verbs and adpositions to the description of motion events and the possible spatial “asymmetries” arising in the corresponding linguistic units and expressions is another point addressed here.

Asymmetry of motion is precisely the topic of the first chapter of the book, by M. Aurnague. The “importance of goals” or “goal (path) bias” (Lakusta and Landau 2005) relates to our apparent proclivity to pay attention to the “goal” of a motion event rather than to its possible “source”. Although mentioned in cross-linguistic research (e.g. Bourdin 1997), “goal bias” and, more generally, asymmetry of motion have been little studied in French.

Aurnague's contribution intends to partly fill this gap by focusing on strict autonomous motion expressed by intransitive or "indirect" transitive verbs (e.g. *aller* + *Prep* 'to go + Prep', *arriver* 'to arrive', *entrer* 'to go into, to enter', *partir* 'to leave', *se rendre* 'to go to', *sortir* 'to go out'). Some constructions associating a directional or manner of motion predicate with an accurate spatial PP can also refer to such eventualities (e.g. *courir* + *Prep* 'to run + Prep', *descendre* + *Prep* 'to go down + Prep', *glisser* + *Prep* 'to slide + Prep', *ramper* + *Prep* 'to crawl + Prep'). The author first sets out the theoretical framework in which strict autonomous motion is analyzed. Notions of *change of placement* and *change of basic locative relation* (Boons 1987) are introduced in order to capture the predicates' spatio-temporal content (Aurnague 2011) and a first asymmetry between "initial" and "final" verbs is emphasized at this stage. Then, a couple of properties also related to asymmetry are examined, namely the possibility for the different verbs to appear in implicit landmark constructions (e.g., *L'homme est sorti, et lentement s'est éloigné* 'The man went out, and slowly moved away') and their association with a spatial PP having an opposite "polarity" (e.g., *Il est arrivé ce matin de Toulouse où il a échappé de justesse à la gestapo* 'He arrived this morning from Toulouse where he only just escaped from the gestapo'). It is claimed that implicit landmark constructions mainly depend on the spatio-temporal structure of the verbs—in particular, their centering on a change of relation— while the recourse to a locative PP with an opposite polarity (to that of the verb) strongly correlates with the former constructions. The chapter continues with an analysis of the system of spatial prepositions in the light of the two concepts of change of basic locative relation and change of placement. This panorama reveals that very few prepositional elements of French are intended to express a "change of relation and placement", that is to say a real or strict motion. Such an outcome is fully consonant with the characterization of French as a typical verb-framed language. After that, Aurnague sums up the main properties through which asymmetry shows up

in French descriptions of strict autonomous displacements and seeks to investigate their possible links. The author also suggests that, beyond its “imprints” in linguistic structures, the preference for goal-oriented descriptions of dynamic space (as revealed by speakers’ productions) may be partly due to a specific pragmatic principle.

The second chapter, authored by L. Sarda, is devoted to the syntactic status of locative PPs associated with different classes of motion predicates in French. By addressing the complex issue of whether locative constituents combining with motion verbs are arguments or adjuncts, Sarda provides an in-depth empirical study of how lexical semantics constrains the syntax of motion events. She first discusses the limits of Talmy’s typological framework for realizing fine-grained semantic analysis of the argument structure of motion predicates and argues that French data do not support a strict opposition between path verbs and manner verbs. For instance, while *partir* ‘to leave’ conveys only the path component and *marcher* ‘to walk’ only manner, motion verbs such as *s’enfuir* ‘to run away’ and *dégringoler* ‘to tumble, to rush down’ obviously conflate in their semantics both path and manner. In order to better capture the fundamental criteria for describing the lexical meaning of motion verbs in French, the author resorts to the classification proposed by Aurnague (2011, this volume), and to a conception of the manner component as a set of parameters involved in the lexical meaning of some motion verbs, following Stosic (2009, this volume). This allows the author to show that various features of manner can be co-lexicalized with a change of relation, and that some features of path can enable certain manner verbs to express directed/telic motion events, which provides evidence for how the semantic content of motion verbs constrains their syntactic behavior.

The second part of Sarda’s study tackles the issue of the obligatoriness or optionality of the PP constituent in combination with four different classes of verbs, for each of which the author selected two representative items. In

order to evaluate the argumentlike or adjunctlike behavior of locative PPs in such constructions, the author uses two complementary methods. On the one hand, she performs a series of syntactic tests borrowed from Lazard (1994), Lakoff and Ross (1976) and Nichols (1986) about the presence, form and position of locative PPs when combined with motion verbs. On the other hand, Sarda conducts a corpus study in a usage-based perspective, providing a fine-grained analysis of about a hundred occurrences per chosen verb with and without a PP, totalling more than one thousand utterances extracted from Frantext<sup>4</sup>. Both the tests and the data exploration allow the author to offer an empirically based answer to questions that are difficult to resolve by intuition alone about the status of locative constituents, and the extent to which they are required or not, governed or not, and/or can remain unexpressed. Sarda's chapter thus provides not only an in-depth pilot study of the argument structure and argument realization of motion verbs in French, but also a solid methodological and theoretical basis for their further exploration.

The third chapter of the volume (by B. Fagard) offers a diachronic analysis of a specific type of evolution that has occurred from Latin to Modern French leading to a significant typological change in the motion domain. Taking as his starting point Talmy's (1985, 2000) well-known typological dichotomy between Satellite-framed and Verb-framed languages, Fagard first recaps the evidence showing that French, like all other Romance languages, is Verb-framed, while Latin, from which it derives, belongs to Satellite-framed languages. Indeed, in the expression of motion events, the lexicalization patterns found in Classical Latin are very similar to what presently exists, for instance, in Modern Germanic and Slavic languages. This

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<sup>4</sup> Frantext (<http://www.frantext.fr>) is a large online textual base for written French (12<sup>th</sup> c. to 21<sup>th</sup> c.) maintained by ATILF, a joint research unit of CNRS and Université de Lorraine located at Nancy. Data from Frantext are used in several contributions in this volume.

clear typological shift entails the loss of satellites in diachrony, in particular during the period between Old French, which was structurally still Satellite-framed, and Modern French (see Iacobini and Fagard 2011). More specifically, while in Classical Latin the path component was principally encoded by verb prefixes and/or particles, in Modern French it is conveyed by verbs and prepositional phrases. The main purpose of Fagard's chapter therefore consists in an attempt to track and to document this evolution in order to determine exactly when and how satellites disappeared. In order to do this, the author conducted an extensive quantitative and qualitative diachronic corpus-based study of over 25 polyvalent expressions in the period from Old to Modern French, providing a very careful and complete survey of their decline throughout the diachrony of French. These expressions, which could behave as adverbs, particles or adpositions, were used in Old French as verb satellites.

Using grammaticalization theory, and construction grammar as a framework, Fagard applies a three-level approach to deal with possible patterns of lexicalization of the path component in the diachrony of French. Following Traugott (2008), he distinguishes between macro-, meso- and microconstructions. Verb-particle constructions thus appear as a particular type of mesoconstruction, which is subdivided into five microconstructions, namely: "caused motion", "path", "manner", "deixis" and "satellite" microconstructions. This allows him to show that, during the vast time span of almost 12 centuries (900–2013), verb-particle constructions gradually evolve from a frequent and productive pattern of lexicalization in Old and Middle French to a very few lexicalized remains in Classical and Modern French. In line with previous research, the author claims that Medieval French is a key period for the shift from a Satellite framed to a Verb framed type. However, thanks to his fine-grained analysis of a series of microconstructions through five successive periods, Fagard points out that the verb-particle construction does not disappear all at once, but rather by a gradual change in

the frequency of microconstructions, as well as by their gradual internal semantic evolution.

### *3.2. Manner of motion and fictive motion*

The issues just commented on were mainly concerned with the path component of motion. Other topics share the common trait of relying less on this aspect of dynamic spatial events. Here, we include the French verbs and constructions whose meaning is not primarily intended to operate a *true localization* of the target, that is to say to *update* its location with respect to a landmark. Manner of motion as well as fictive motion or non-actual motion clearly belong to this second set of topics.

Stosic's contribution addresses the issue of the lexical encoding of manner in the semantic domain of dynamic space. The chapter provides both a survey of different approaches to manner in lexical semantics and an in-depth lexical analysis of the lexicon of manner of motion verbs in French. Firstly, the author offers an overview of five possible strategies that contribute to the expression of manner in French, namely lexical, syntactic, morphological, grammatical and prosodic (see Moline and Stosic 2016). By bringing to the fore different mechanisms shared by all five linguistic strategies for encoding manner, Stosic proposes a more comprehensive, unifying definition of the concept of manner. In line with previous research, it is also argued that the concept of manner is compositional by nature, and by no means monolithic, because it encompasses a wide range of semantic values. Secondly, the author undertakes a detailed semantic analysis of a very large lexicon of motion verbs in French, aiming to reveal underlying patterns of how the manner component is constructed at the lexical level. In doing so, more than 560 manner of motion verbs are identified in the general lexicon of motion verbs. This empirical result shows that the lexicalization of manner of motion in French is widespread, and contradicts the generally accepted



theoretical view that French, as a verb-framed language, is impoverished in manner of motion verbs. Another interesting result of Stosic's empirical exploration of manner of motion verbs in French is that the lexicalization of manner affects all semantic categories of motion verbs. By adopting the main oppositions of Aurnague's (2011) classification of motion verbs, the author shows that the majority of manner of motion verbs are atelic and describe "weak motion" and "change of disposition", but also that more than 20% of them are telic, as they involve a change of basic locative relation.

Next, Stosic raises the issue of the compositionality of the manner component at the lexical level and demonstrates that it is made up of a very restricted set —precisely thirteen— of more elementary, non-idiosyncratic semantic features (or parameters), such as: BODY MOTION PATTERN, SPEED, SHAPE OF THE PATH, FIGURE CONFIGURATION, INSTRUMENT, etc. At the lexical level, manner thus appears to be rather a cluster concept and not at all a unitary, indecomposable notion. An extended version of Levin and Rappaport Hovav's (1998) model of lexical decomposition is used to represent the meaning of manner of motion verbs. In line with Levin and Rappaport Hovav's model, manner fulfils the function of a constant, and acts more precisely as the modifier of the general motion predicate GO or MOVE. One or two of the thirteen semantic parameters are assumed to occupy a modifier position in the representation of the meaning of each manner of motion verb: its/their role then consists in diversifying, and thereby in modifying, the root predicate. This is precisely what triggers the manner interpretation at the lexical level. Stosic's chapter thus sketches out a more general approach to the lexical coding of manner and opens new perspectives to investigate it.

Following on from Stosic's contribution, Stosic and Amiot's chapter examines another kind of means for expressing manner in the motion domain, namely morphology. Contrary to lexical and syntactic devices and strategies for expressing manner, that have been extensively studied during the last three decades, morphological devices are dealt with when studying the expression

of the path component, but are far from being considered when talking about the encoding of manner. In line with previous research dealing with evaluative morphology, aspectuality, manner and space semantics, the authors argue that many affixational and non-affixational processes of what is called “evaluative” and “pluractional” morphology participate in the expression of manner of motion (see, among others, Cusic 1981; Stump 1993; Stosic and Amiot 2011). This claim is particularly valid for the verbal domain, because, in the languages of the world, there is a wide range of morphological markers that, thanks to values such as diminution, augmentation, iteration, internal plurality, distribution, randomization, and so on, express a non-canonical way of performing the action described by the base verb (e.g. *sauter* ‘to jump’ > *sautiller* ‘to hop (around)’, *voler* ‘to fly’ > *voleter* ‘to fly here and there, to flutter around’). The main focus of Stosic and Amiot’s chapter is the interaction, or rather the compatibility, between evaluative morphology and motion. Undertaking an in-depth morphological and semantic analysis, the authors’ twofold aim is firstly to investigate to what extent it is possible in French to form evaluative verbs from motion verbs, secondly to establish and to describe principles that enable or block evaluation of motion processes.

Stosic and Amiot take as their starting point previous research on this topic, which has predicted the relative reluctance of motion verbs to be used as bases for forming evaluative lexemes. What is generally found is only a small set of basic manner of motion verbs such as *to run*, *to jump*, *to fly*, *to walk*, and some others depending on language. In order to test the validity of this preliminary research, the authors undertake an extended empirical analysis based on a large amount of data collected mainly from modern lexicographic resources but also from the web, by using several morphological patterns of extraction. According to Stosic and Amiot, in French, about fifty motion verbs proved to be used as bases for the formation of more than sixty evaluative verbs. These verbs are almost all formed by suffixation and hardly ever by prefixation, and they mostly describe atelic

processes. It is also observed that not all evaluative motion verbs express manner because some of them are only used for pragmatic marking of an informal usage of language and do not involve any modification in the realization of the motion processes described by base verbs. Stosic and Amiot conclude their chapter with a discussion of the main principles governing the evaluation of motion processes on the basis of French data. What is particularly stressed is the importance of considering the aspectual nature of the process described by the base verb, as well as the need to make a clear distinction between the referential and pragmatic meanings of evaluative lexemes.

Like manner, fictive motion or non-actual motion (Talmy 1996, 2000; Blomberg and Zlatev 2014) has not been the subject of many studies in French, although it was identified early on as a matter of interest (Boons et al. 1976). However, and contrary to manner, it gave rise to a great deal of research and discussion in English language literature. Cappelli's chapter tries to fill this gap by providing a large range of data from French, in the light of which the main assumptions put forward by scholars can be discussed. The author begins by remarking that the linguistic phenomena grouped together under the notion of fictive motion differ significantly from one study to another, as do the explanations put forward to account for these phenomena. Following Blomberg and Zlatev's (2014) observations, the three main psychological motivations recurrently mentioned by researchers are illustrated: enactive perception, mental scanning and imagination. After identifying some elements that may be at the source of these discrepancies, Cappelli claims that, as for manner, the study of fictive motion should be based on a clear categorization of (actual-) motion verbs and events making it possible to assess the very nature of the predicates that give rise to this kind of interpretation. He also advocates using a large corpus of attested examples and considering fictive motion beyond the sentence, at the discourse level. After setting out the theoretical framework used for classifying dynamic

spatial verbs, together with the corpus of French examples built up by the author from Frantext, fictive motion is first examined within the sentence. It is shown that the targets (or trajectors, figures) involved in the attested examples are not systematically travelable entities or even stretched/elongated entities (opening the way to a mental scanning). Other parameters mentioned in the literature (e.g. Matsumoto 1996) are also discussed, such as the “manner condition” or the possibility (or not) for duration, speed and instrumentality to play a role in the expression of fictive motion. Along the way, the author provides interesting observations about the importance of entities’ function and force dynamics, the properties of the paths denoted by verbs that lack a complement (in attested examples: e.g. *descendre* ‘to go down’, *disparaître* ‘to disappear’, *s’élancer* ‘to rush forward’, *tomber* ‘to fall’) or the difficulty for “migration paths” (described by verbs such as *émigrer* ‘to emigrate’, *migrer* ‘to migrate’) to give rise to fictive motion interpretations. At the discourse level, Cappelli suggests that almost all of the “composite” examples in his corpus (Cappelli 2013) come under the descriptive mode of discourse defined by Smith (2003) while the three kinds of spatial descriptions highlighted by Tversky (1996) appear in these examples: routes, surveys and gaze tours. Discourse also proves to be the most appropriate level to explore the possible manifestations of subjectivity and perceptual modalities (in particular sight or vision) in fictive motion descriptions.

### 3.3. Psycholinguistic issues

The possible impact that the expression of dynamic space in a given language may have on *non-verbal cognition* has become a very important line of research, since Talmy’s (1985, 2000) seminal work on lexicalization patterns

(with the opposition between verb-framed and satellite-framed languages),<sup>5</sup> and the emergence of a revisited version of linguistic relativity (e.g. Gumperz and Levinson 1996). Recent work on this issue has focused on activities occurring together with the verbal expression of motion, whether they contribute directly to the content communicated such as *gesture*, or only accompany it such as *eye movements*. The third part of the volume is thus devoted to this kind of psycholinguistic research carried out on both French and other languages.

Soroli, Hickmann and Hendriks' contribution takes data from French as the main thread and compares them to observations related to other languages, either typologically similar or not (in regard to the way they refer to dynamic space), extracted from the authors' own protocols or reported by other scholars. The chapter begins by recalling the many questions that the opposition between verb-framed and satellite-framed languages raises when applying it to a variety of languages of the world and the subsequent refinements that have been proposed in order to account for data that do not fall under such a strong dichotomy (for instance, the notion of "equipollently-framed" languages proposed by Slobin (2004)). The different —and often divergent— ways in which the notions of path and manner are handled in the linguistic as well as in the psycholinguistic or experimental literature is another question tackled by the authors who explain their own views on the subject. Then, the authors review the main evidence currently available in the field of dynamic space about the language-cognition interface. Production

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<sup>5</sup> Recall that while canonical motion constructions of verb-framed languages express path of motion through the main verb of the clause, satellite-framed languages do the same thing through a satellite or adpositional element, allowing the verb of the construction to denote manner of motion. In satellite-framed languages, but not in verb-framed ones, path and manner are thus typically included or conflated in a single clause.

measures that have generated a great amount of work are first reported, whether they involve semi-controlled or controlled tasks (e.g. picture books vs. video-clips) or even free narrations (e.g. spontaneous conversations with children). Beyond possible discrepancies about the stage at which the motion constructions/patterns of a specific language start conditioning children's productions, all of these experiments confirm that the typological characteristics of languages (in regard to dynamic spatial descriptions) have a clear impact on the way spatial properties of dynamic scenes are accessed and selected by subjects/speakers before being encoded and articulated in a suitable discourse. However, observing language effects on (off-line) linguistic productions can appear somewhat circular and *on-line* measures are needed in order to better see how cognitive mechanisms really operate.

The remainder of the chapter is thus dedicated to experiments that attempt to access on-line processes related to visual perception. A first set of work investigates how subjects explore visual stimuli (e.g. motion scenes depicted in pictures, video-clips or animated cartoons) while preparing to speak (e.g. Soroli and Hickmann 2011). They mainly aim at determining whether language has an impact on how speakers allocate visual attention to the different parts or components of these "visual events". Yet, whereas the exploration of visual motion scenes within production or similarity judgment (categorization) tasks explicitly involving linguistic material offers interesting on-line information, it may not provide sufficient evidence to state a *true* impact of language on *non-verbal cognition*. That is why several experiments were designed, that include interference activities (e.g. tapping, sounds, repetition of non-words or numbers) meant to prevent "internal verbalization" and a direct influence of language on the subjects' non-verbal processing (e.g. Trueswell and Papafragou 2010).

Fibigerova and Guidetti's chapter examines gesture and its relations with speech when talking about dynamic space. The domain of gesture is introduced to the reader by distinguishing several sorts of hand/body

movements and by focusing on *co-verbal gesture* whose main properties are highlighted. The authors argue that because of their physical and concrete nature, motion events are very well suited to be depicted by gesture. They can complement speech in two ways: conveying mental contents that are not necessarily verbalized, or emphasizing those elements of the utterance that constitute the core ideas of the speaker's intentions (Kendon 2004; McNeill 1992). Concerning dynamic space and the expression of *path* and *manner*, gesture accompanying a motion description can be characterized according to the meaning components it conveys (path, manner, path + manner) and to the internal organization of the gesture (single vs. several gestures; content of each gesture stroke). Thus, a central question is whether the gestural patterns observed in a given language are or are not congruent with the pattern of canonical motion constructions in the language (see Note 5). Previous work on this issue indicated that speakers of typologically distinct languages such as French, English and Czech displayed similar gestural patterns, mainly resorting to only-path gestures (e.g. Fibigerova et al. 2012). Fibigerova and Guidetti's chapter tries to go one step further in the comparison of motion descriptions in French (verb-framed) and Czech (satellite-framed), examining carefully the *structure* of both verbal production and co-verbal gesture: how many clauses and gestures are used by speakers for a given motion event/stimulus (*number* variable)? when both path and manner are expressed (*complexity* variable), how do they distribute over clauses and gesture strokes (multi-clause and multi-gesture cases), in particular is there a clause or gesture that associates path and manner? The experiment designed by the authors involved participants of different ages (children and adults) who were presented with short video-clips of motion events. They had to recount the contents of the videos to an assistant accompanying the experimenter. After describing the whole protocol and the coding process, the results are presented in three steps, namely speech, gesture, and speech-gesture relations,

for which the two variables previously mentioned —number and complexity— are systematically examined.

#### *3.4. Formal and computational aspects of motion-based narrations*

Research on the formal representation of motion in language and its computer processing is another complementary field that is likely to positively interact with both descriptive and psycholinguistic work. Formal models of the expression of motion can, for instance, intend to reflect phenomena and hypotheses put forward by descriptive linguistics while, under certain conditions, the computational processing of motion utterances' meaning can be viewed as simulating/implementing cognitive models. These facets of current studies on dynamic space in French are the focus of this fourth part of the book. They are mainly illustrated through the analysis of motion-based narrations such as travel narratives and hiking descriptions or guidebooks.

Lefevre, Moot and Retoré's chapter is the first contribution dedicated to the formal and computational aspects of motion in French. Like Cappelli, the authors address the question of dynamic space —and its relations with static space— through the analysis and processing of linguistic descriptions relying on fictive or non-actual motion (Talmy 1996, 2000; Blomberg and Zlatev 2014). More precisely, they aim at proposing a syntactic-semantic formalization of descriptions of this kind collated in a French corpus of travel narratives though the Pyrenees (17<sup>th</sup>–20<sup>th</sup> centuries). For this first attempt at the formal modeling of fictive or non-actual motion in French, one of the interpretations or experiences usually cited when explaining such a phenomenon (Blomberg and Zlatev 2014) is emphasized, namely the imaginary or “virtual traveler” (be it the speaker or any other imaginary/virtual entity).

The syntax-semantics interface is tackled through a categorial grammar (Lambek calculus) associated with an extensional fragment of



Montague grammar (Montague 1974) and its basic semantic types. Such a framework is not well equipped to deal with selectional restrictions and meaning transfers. Therefore, a richer system of semantic types has to be provided together with some mechanisms of type shifting or coercion to be applied when a semantic mismatch occurs between a predicate and an argument. The framework is thus further adapted to associate each lexical entry with one or more “morphisms”, that provide alternative meanings of the lexeme in terms of (enriched) semantic types, and with operations intended to control co-predication. The resulting framework is called “Montagovian generative lexicon” (Retoré 2014) in reference to both Montague’s and Pustejovsky’s (1995) proposals. A final specificity of the formal modeling is that the different meanings of the lexical entries are expressed through  $\lambda$ -DRT formulas of “Discourse Representation Theory” (van Eijck and Kamp 1997).

Lefevre, Moot and Retoré introduce various semantic types that will be useful for the analysis of their corpus of itineraries: events, persons or animate beings, immobile entities (mainly locations), paths... Several functions are also available to associate paths with events or immobile entities (such as lanes and roads) or to retrieve the source or goal/destination of a path. Fictive motion is then addressed as a problem of mismatch between the type(s) required by a motion predicate and that assigned to the lexicon entry of its grammatical subject. For instance, a verb such as *descendre* ‘to descend, to go down’ expects an animate subject in order to be correctly processed and a sentence such as *Le chemin descend* ‘the lane is descending/going down’ is not licensed by the formal system because a lane is a static or immobile entity. Two coercion functions are thus created (through “morphisms”, cf. supra) to make fictive motion descriptions acceptable, one that associates an immobile entity like a lane or road with a “path of motion” (coercion from immobile entities to paths) and another one that coerces the person or animate being in subject argument position of the verb to the path corresponding to the motion event.

The last chapter of the book, by Gaio and Moncla, further investigates the formal and computational processing of motion-based narrations by focusing on hiking descriptions of French and other Romance languages (Spanish, Italian) that are more and more abundant on the web. This contribution seeks to automatically parse and formally encode specific information contained in hiking descriptions —related to places and spatial actions associated with them— in order to reconstruct and map the verbally described itinerary. This main aim is divided up into three subtasks: annotating places and their associated spatial relations in texts (geoparsing), geolocating places according to their context of evocation (geocoding), and reconstructing the itinerary on a map.

The first step consists in identifying and extracting from the texts the names of locations/places or toponyms they contain, a task that requires shallow parsing and comes under the general domain of “Named Entity Recognition and Classification” (NERC) (e.g. Buscaldi and Rosso 2008; Purves and Derungs 2015). Strategies for recognizing toponyms (and, more generally, named entities) can be classified in two main categories: data-driven approaches and knowledge-based approaches. While the authors choose a knowledge-based approach, they first implement a fine-grained grammar for the recognition and classification of toponyms which is not limited to *pure proper names* of places but distinguishes several levels of *descriptive proper names* (association of pure proper names with descriptive expansions). This grammar is extended to a more complex “VT” construction grammar intended to associate the “extended named entity” (ENE) and its specific internal structure with the verb (usually a motion verb) and possible adpositional locative relation(s) present in its immediate co-text. If a correct parse tree is found the ENE becomes a candidate to be an “Extended Spatial Named Entity” (ESNE). Geocoding can then start with the double objective of selecting true place names among the candidate ESNE and locating their referents on a map through geocoded representations. The VT structure

associated with a candidate ESNE possibly supplemented by information on its ontological types and subtypes (e.g. city, lake, river) —extracted from the intra-sentential context or inferred— is the way chosen by the authors to query geographical resources such as gazetteers (Moncla and Gaio 2015). Associating the name of a location/place with the appropriate referent in terms of geographical coordinates raises complex problems related, for instance, to referential ambiguity or to the lack of information for fine-grained toponyms. The chapter sets out specific strategies for these two cases. Once all the place names of a hiking description have been identified, together with the location of their referents, the last part of the processing chain aims at reconstructing the itinerary that is the closest to the real route. Gaio and Moncla's contribution follows with a series of experiments and evaluations of their proposal, based on the multilingual corpus PERDIDO (French, Spanish, Italian).

#### **4. New perspectives for the study of dynamic space in language and cognition**

Focusing on data from French and influenced by at least three decades of investigation on the expression of space (in this language), the contributions in this volume are likely to open new perspectives for the study of motion in language and cognition in general. It is not our intention to make a full survey of these new avenues and research. We will rather illustrate them by discussing the inescapable opposition between path and manner used in a myriad of studies, included in this book.

##### *4.1. Searching for the semantic components of motion events*

As early as 2006, Levinson and Wilkins highlighted the *problems and limitations of the path vs. manner contrast* when describing the grammars of space of a sample of languages including non-Europeans ones —e.g. Arrernte, Jaminjung, Kilivila, Yéllí Dnye, Warrwa, Yukatek Maya (Levinson and Wilkins 2006: 527–530). They pointed out “the need for a better understanding of the semantic components involved in motion events” and insisted that a crucial issue is “the notion of motion itself” (Levinson and Wilkins 2006: 531). On the basis of the dozen idioms observed, they suggested (Levinson and Wilkins 2006: 531–533) that at least two modes of describing and conceptualizing dynamic spatial situations exist in languages, depending on whether motion is conceived as a continuous change through space (“translocation”, atelic/*durative* inner aspect) or in a more discontinuous way by means of spatial changes of state (telic inner aspect, *non-durative* or “punctual”). The notion of *change of placement* within the terrestrial framework highlighted in (Aurnague 2011) is in accordance with the view of a continuous/*durative* displacement in space (see Aurnague’s and Cappelli’s contributions in this volume).<sup>6</sup> In contrast, *change of basic locative relation* with respect to a landmark (Boons 1987) reflects the discontinuous/*non-durative* way of conceptualizing and verbalizing motion. Not only are these concepts (separately) materialized in the verbs and associated events of the same language but, as shown by French data, they open the way to combinations and categories organizing dynamic spatial eventualities on a continuum from near staticness to real motion/displacement (see Stosic’s and Stosic and Amiot’s contributions in this volume). Because it is mostly centered on the internal changes of a moving target (or trajector, figure), manner of motion often involves predicates and utterances implying a continuous point of view on dynamic spatial events, a correlation which

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<sup>6</sup> The terrestrial framework is implicit and verbs of mere change of placement do not need to include any landmark entity in their argument structure.

probably contributed to making the latter property of motion —as well as the opposition between continuity/durativity and discontinuity/non-durativity— less visible. However, the expression of manner does indeed cross-cut the two conceptualizations of motion commented on above and can sometimes combine with discontinuous displacements in the semantics of verbs (e.g. speed or discreteness co-occurring with initial changes of basic locative relations; see Stosic’s contribution in this volume).

Beyond the validity of the path vs. manner opposition in the analysis of spatial language and the search for alternative or additional contrasts, it should be noted that the very notions involved in this opposition are far less well defined. Let us first discuss the concept of path.

#### 4.2. *Path and localization*

Studies on motion that are grounded on the path vs. manner distinction often forget that a major semantic and pragmatic function of spatial descriptions in language is to make it possible to locate the target entity (or entities) evoked in the description or, at least, to efficiently contribute to its (their) localization. Notions of “search for the target” (or trajector) and “search domain of the target”, for instance, have proved to be very important in the analysis of spatial markers and descriptions (e.g. Vandeloise 1987, 1988; see also Langacker 1987; Zlatev 1997). In spite of some specific tools provided by scholars who originally dealt with paths —see, in particular, Talmy’s (1985, 2000) “vector component”—, many researchers handle this conceptual category without due care, notably making no clear distinction between dynamic predicates that *do not necessarily update* the location of the moving target (with respect to a landmark; e.g. *avancer* ‘to advance, to move forward’, *tourbillonner* ‘to whirl (round), to swirl (round)’, *vagabonder* ‘to roam, to wander’, *zigzaguer* ‘to zigzag along’) and predicates that *compulsorily* operate such an updating (e.g. *arriver* ‘to arrive’, *partir* ‘to

leave’, *se rendre* ‘to go to’). Beyond semantic considerations, it should be noted that spatial PPs associated with these two kinds of verbs very often fulfil different syntactic functions: they are modifiers in the former case (at least in one interpretation) and real complements in the latter one.

Another widespread view on paths is their systematic decomposition into two or even three “phases” or parts —initial, final and sometimes medial—, with possible focuses on some of them achieved through cognitive mechanisms such as “windowing of attention” (Talmy 2000). Yet, recent work on English corpora (e.g. Stefanowitsch and Rohde 2004) suggests that, even in this language,<sup>7</sup> sentences such as *When his parents went out of the town, he quickly cut loose* or *He escaped from Alcatraz* do not involve any other phase than a source or initial displacement in their underlying path. The same thing can be observed in a description such as *Max est parti de chez lui à 8 heures* ‘Max left home at 8 o’clock’ in French, and very probably occurs in other languages (mostly verb-framed or including serial verbs: Bohnemeyer et al. 2007) where the internal structure of motion verbs is possibly grounded on only one of the three phases or “changes of basic locative relation” previously mentioned (in particular initial or final ones). As illustrated above, these kinds of verb often give rise to sentences denoting only the corresponding change of locative relation, without any other putative

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<sup>7</sup> In our opinion, the general view of a “path of motion” possibly made up of two or more phases/parts has been greatly influenced by the properties of *canonical motion descriptions in English* together with *extra-linguistic* considerations. The atelic character of many verbs of manner of motion and the possibility of combining these durative or continuous predicates (see above) with a series of satellites or adpositions expressing successive changes of locative relations with respect to different landmarks, have significantly contributed to promoting such a conception of paths. English speakers (and linguists!) are indeed quite accustomed to compact sentences with a series of dynamic spatial PPs “stacked” after the verb, allowing them to introduce complex/extended paths or “journeys” (Slobin 1996, 2004).

components of the path being recoverable from the co-text or the situational context, or even being conceptually needed for the understanding of the utterance.

#### *4.3. Interacting with manner*

Regarding manner, a major effort remains to be made in order to highlight the meaning properties or features underlying this notion, unless one decides to process it as a heterogeneous or fuzzy concept (e.g. Mani and Pustejovsky 2012: 48–52). The psycholinguistic experiments set out in (Slobin et al. 2014) constitute a significant step forward in this direction but a descriptive analysis of the motion lexicon is indispensable in each language and is likely to bring to light even more semantic components of manner, including those that combine with path (see below). At least, that is what emerges from the observation of French data drawing on a large list of verbs (see Stosic’s contribution in this volume), several properties that were not present in Slobin et al.’s experiments being revealed by the lexical decomposition: e.g. discreetness, extension of motion, purpose/aimlessness. Tracking the different features of manner of motion in language implies a case-by-case individuation emphasizing the peculiarities of each of them but it also needs to identify their *common semantic function* as true specifiers of more general motion predicates (beyond their apparent heterogeneity). This is a necessary condition for bringing the features together under the domain of manner of motion. Even more crucially, manner in dynamic spatial events questions the very limits between manner and path and, more generally, the way these two notions interact. For instance, while the predicates indicating the lack of a goal (e.g. *errer* ‘to wander’, *divaguer* ‘to ramble, to wander’, *rôder* ‘to roam (about), to loiter (about)’, *vagabonder* ‘to roam, to wander’) are often

considered as falling within the category of manner,<sup>8</sup> what kind of information do the verbs describing the form or shape of the target's trajectory (e.g. *louvoyer* 'to tack', *tourbillonner* 'to whirl (round), to swirl (round)', *serpenter* 'to snake, to wind', *zigzaguer* 'to zigzag along') convey: manner, manner and path, or just path (for connected discussions, see Nikanne and van der Zee 2012; Vulchanova and Martinez 2013)? Also, the usual conception of manner and path mechanically leads to considering that verbs such as *dégringoler* 'to tumble, to rush down' and *s'enfuir* 'to run away' convey both of these notions (manner + path) and are, in this respect, closer to each other than the former to *courir* 'to run' (only manner) and the latter to *partir* 'to go (away), to leave' (only path). Rather than a matter of manner, this grouping follows from the view on paths previously mentioned where some events are brought together independently of their ability or not to update the location of the target. Yet, while the events denoted by *dégringoler* and *courir* can entirely take place *within* an encompassing landmark (no change of basic locative relation occurs with respect to it; see Aurnague's and Cappelli's chapters in this volume), *s'enfuir* and *partir* necessarily denote a change of locative relation with respect to the landmark underlying their semantic content. As we can see, the now classic conception of manner and path and their interaction blurs other very important aspects of dynamic space in language such as the opposition between durative vs. non-durative displacements reported by Levinson and Wilkins (2006) —an opposition which is correlated with a continuous vs. discontinuous view on motion processes (see above). Instead of manner itself, it is the way this notion is articulated to motion which is at issue here and this observation echoes Levinson and Wilkins' statement that there is still much to be done in order to capture the very concept of motion in language and cognition (especially

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<sup>8</sup> Note that these verbs indirectly suggest an erratic displacement and are thus likely to also introduce constraints on the form or shape of the target's trajectory.



that of path in our opinion). One possible solution could consist in limiting path events to those markers that obligatorily update the location of the moving target with respect to a landmark (landmark-oriented motion, discontinuous), and to distinguish these cases from those in which the marker's content is rather *focused* on the *moving target itself* or on its *immediate trajectory* (target-oriented motion, continuous).<sup>9</sup> A significant part of the expression of manner may show itself with verbs following this second pattern (focalization on the target or the target's immediate trajectory). Obviously, such a proposal should be explored in greater depth to be fully operational but this kind of reflection is likely to contribute to a debate which is, we believe, quite open at the moment.

As can be seen, dynamic space and motion is a central domain for exploring the relations between language and cognition through a multidisciplinary investigation involving a variety of methods and approaches. Far from being fully delineated, it is obvious that a number of questions in this domain are still not satisfactorily resolved, including basic issues (such as the meaning components of motion in language) on which one would expect a well-established and consensual view to exist. This is, at least, what this book tries to show by highlighting some of these outstanding questions, and providing empirical and theoretical elements intended to push forward future discussions.

## References

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<sup>9</sup> After all, such a distinction would not be absurd if one considers that a major specificity of verb-framed languages is to express *changes of locative relations* through some of their verbs while true satellite-framed languages do the same through satellites and prepositions.

- Asher, N., & Sablayrolles, P. (1995). A typology and discourse semantics for motion verbs and spatial PPs in French. *Journal of Semantics*, 12(2), 163–209.
- Aske, J. (1989). Path predicates in English and Spanish: A close look. In K. Hall, M. Meacham, & R. Shapiro (Eds.), *Proceedings of the 15th Annual Meeting of the Berkeley Linguistics Society* (pp. 1–14). Berkeley, CA: Berkeley Linguistics Society.
- Aurnague, M. (2004). *Les structures de l'espace linguistique: Regards croisés sur quelques constructions spatiales du basque et du français*. Leuven: Peeters.
- Aurnague, M. (2009). *A cet endroit vs. dans un tel endroit: Ce que à nous dit d'endroit et vice-versa*. *Langages*, 173, 34–53.
- Aurnague, M. (2011). How motion verbs are spatial: The spatial foundations of intransitive motion verbs in French. *Linguisticae Investigationes*, 34(1), 1–34.
- Aurnague, M., Hickmann, M., & Vieu, L. (Eds.). (2007). *The categorization of spatial entities in language and cognition*. Amsterdam & Philadelphia: John Benjamins.
- Aurnague, M., & Vieu, L. (1993). A three-level approach to the semantics of space. In C. Zelinsky-Wibbelt (Ed.), *The semantics of prepositions: From mental processing to natural language processing* (pp. 395–439). Berlin: Mouton de Gruyter.
- Bally, C. (1932/1965). *Linguistique générale et linguistique française*. Berne: Francke.
- Berman, R. A., & Slobin, D. I. (Eds.). (1994). *Relating events in narrative: A crosslinguistic developmental study*. Hillsdale, NJ: Lawrence Erlbaum.
- Blomberg, J., & Zlatev, J. (2014). Actual and non-actual motion: Why experimentalist semantics needs phenomenology (and vice versa). *Phenomenology and the Cognitive Sciences*, 13(3), 395–418.
- Bohnemeyer, J., Enfield, N. J., Essegbey, J., Ibarretxe-Antuñano, I., Kita, S., Lüpke, F., & Ameika, F. K. (2007). Principles of event segmentation in language: The case of motion events. *Language*, 83(3), 495–532.
- Boons, J.-P. (1985). Préliminaire à la classification des verbes locatifs: Les compléments de lieu, leurs critères, leurs valeurs aspectuelles. *Linguisticae Investigationes*, 9(2), 195–267.

- Boons, J.-P. (1987). La notion sémantique de déplacement dans une classification syntaxique des verbes locatifs. *Langue Française*, 76, 5–40.
- Boons, J.-P., Guillet A., & Leclère C. (1976). *La structure des phrases simples en français: Constructions intransitives*. Geneva: Droz.
- Borillo, A. (1998). *L'espace et son expression en français*. Paris: Ophrys.
- Borillo, M., & Sablayrolles, P. (1993). The semantics of motion verbs in French. In *Proceedings of the 13<sup>th</sup> International Conference on Artificial Intelligence, Expert Systems and Natural Language Processing* (vol. 3), Avignon'93, (pp. 189–199). Avignon, 24–28 May 1993.
- Bourdin, P. (1997). On goal-bias across languages: Modal, configurational and orientational parameters. In *Proceedings of LP'96 "Typology: prototypes, item orderings and universals"* (pp. 185–216). Prague, 20–22 August 1996.
- Bowerman, M., de León, L., & Choi, S. (1995). Verbs, particles, and spatial semantics: Learning to talk about spatial actions in typologically different languages. In E.V. Clark (Ed.), *Proceedings of the Twenty-Seventh Annual Child Language Research Forum* (pp. 101–110). Stanford, CA: CSLI.
- Burenhult, N., & Levinson, S. C. (2008). Language and landscape: A cross-linguistic perspective. *Language Sciences*, 30(2–3), 135–150.
- Buscaldi, D., & Rosso, P. (2008). A conceptual density-based approach for the disambiguation of toponyms. *International Journal of Geographical Information Science*, 22(3), 301–313.
- Cablitz, G. H. (2008). When “what” is “where”: A linguistic analysis of landscape terms, place names and body part terms in Marquesan (Oceanic, French Polynesia). *Language Sciences*, 30(2–3), 200–226.
- Cappelli, F. (2013). *Etude du mouvement fictif à travers un corpus d'exemples du français: Perspective sémantique du lexique au discours*. PhD dissertation. Toulouse: Université de Toulouse-Le Mirail.
- Cooper, G. S. (1968). *A semantic analysis of English locative prepositions* (Bolt, Beranek & Newman report 1587). Springfield, VA: Clearing House for Federal Scientific and Technical Information.
- Creissels, D. (2006). Encoding the distinction between location, source and destination: A typological study. In M. Hickmann, & S. Robert (Eds.), *Space*

- in languages: Linguistic systems and cognitive categories* (pp. 19–28). Amsterdam & Philadelphia: John Benjamins.
- Cusic, D. (1981). *Verbal plurality and aspect*. PhD dissertation. Stanford, CA: Stanford University.
- Fibigerova, K., Guidetti, M., & Šulová, L. (2012). Verbal and gestural expression of motion in French and Czech. In L. Filipović, & K. M. Jaszczolt (Eds.), *Space and time across languages and cultures II: Language, culture and cognition* (pp. 251–268). Amsterdam & Philadelphia: John Benjamins.
- Grinevald, C. (1994). Jacalteco directionals: Their meaning and their function. *Languages of the World*, 7, 23–36.
- Grinevald, C. (2006). The expression of static location in a typological perspective. In M. Hickmann & S. Robert (Eds.), *Space in languages: Linguistic systems and cognitive categories* (pp. 29–58). Amsterdam & Philadelphia: John Benjamins.
- Gross, M. (1975). *Méthodes en syntaxe : Régime des constructions complétives*. Paris: Hermann.
- Guillet, A., & Leclère, C. (1992). *La structure des phrases simples en français: Les constructions transitives locatives*. Geneva: Droz.
- Gumperz, J.J., & Levinson, S.C. (1996). *Rethinking linguistic relativity*. Cambridge: Cambridge University Press.
- Hasko, V., & Perelmutter, R. (Eds.). (2010). *New approaches to Slavic verbs of motion*. Amsterdam & Philadelphia: John Benjamins.
- Herskovits, A. (1982). *Space and the prepositions in English: Regularities and irregularities in a complex domain*. PhD dissertation. Stanford: Stanford University.
- Herskovits, A. (1986). *Language and spatial cognition: An interdisciplinary study of the prepositions in English*. Cambridge: Cambridge University Press.
- Hickmann, M. (2006). The relativity of motion in first language acquisition. In M. Hickmann & S. Robert (Eds.), *Space in languages: Linguistic systems and cognitive categories* (pp. 281–308). Amsterdam & Philadelphia: John Benjamins.

- Hill, D. (1996). Distinguishing the notion “place” in an Oceanic language. In M. Pütz, & R. Dirven (Eds.), *The construal of space in language and thought* (pp. 307–328). Berlin: Mouton de Gruyter.
- Iacobini, C. & Fagard, B. (2011). A diachronic approach to variation and change in the typology of motion event expression. A case study: From Latin to Romance, *Faits de Langues. Les Cahiers*, 3, 151–171.
- Jackendoff, R. (1983). *Semantic and cognition*. Cambridge, MA: MIT Press.
- Jackendoff, R. (1990). *Semantic structures*. Cambridge, MA: MIT Press.
- Jackendoff, R. (1996). The architecture of the linguistic-spatial interface. In P. Bloom, M. A. Peterson, L. Nadel, & M. F. Garrett (Eds.), *Language and space* (pp. 1–30). Cambridge, MA: MIT Press.
- Kelly, A., & Melinger, A. (Eds.). (2001). *Max-Planck-Institute for Psycholinguistics: Annual report 2001*. Nijmegen: MPI für Psycholinguistik.
- Kendon, A. (2004). *Gesture: Visible action as utterance*. Cambridge: Cambridge University Press.
- Kopecka, A. (2006). The semantic structures of motion verbs in French. In M. Hickmann & S. Robert (Eds.), *Space in languages: Linguistic systems and cognitive categories* (pp. 83–101). Amsterdam & Philadelphia: John Benjamins.
- Krifka, M. (1995). Telicity in movement. In P. Amsili, M. Borillo, & L. Vieu (Eds.), *Time, Space and Movement: Meaning and knowledge in the sensible world, Working Notes of the 5<sup>th</sup> International Workshop* (pp. 63–75 Part A). Toulouse: LRC.
- Lakoff, G., & Ross, J. (1976). Is deep structure necessary? In J. D. McCawley (Ed.), *Syntax and Semantics*, 7, 159–164.
- Lakusta, L., & Landau, B. (2005). Starting at the end: The importance of goals in spatial language. *Cognition*, 96, 1–33.
- Lamiroy, B. (1983). *Les verbes de mouvement en français et en espagnol*. Amsterdam & Philadelphia: John Benjamins.
- Langacker, R. W. (1986). Abstract motion. In *Proceedings of the 12<sup>th</sup> Annual Meeting of the Berkeley Linguistics Society* (pp. 455–471). Berkeley, CA: Berkeley Linguistics Society.

- Langacker, R. W. (1987). *Foundations of cognitive grammar I: Theoretical prerequisites*. Stanford, CA: Stanford University Press.
- Langacker, R. W. (1999). Virtual reality. *Studies in Linguistic Sciences*, 29, 77–103.
- Langacker, R.W. (2010). Reflections on the functional characterization of spatial prepositions. *Corela*, HS-7, <https://corela.revues.org/999>
- Laur, D. (1991). *Sémantique du déplacement et de la localisation en français: Une étude des verbes, des prépositions et de leurs relations dans la phrase simple*. PhD dissertation. Toulouse: Université de Toulouse-Le Mirail.
- Laur, D. (1993). La relation entre le verbe et la préposition dans la sémantique du déplacement. *Langages*, 110, 47–67.
- Lazard, G. (1994). *L'actance*. Paris: PUF.
- Leech, G. N. (1969). *Towards a semantic description of English*. London: Longman.
- Levin, B., & Rappaport Hovav, M. (1992). The lexical semantics of verbs of motion: The perspective from unaccusativity. In I.M. Roca (Ed.), *The thematic structure: Its role in grammar* (pp. 247–269). Berlin: Foris Publications.
- Levin, B., & Rappaport Hovav, M. (1995). *Unaccusativity: At the syntax-lexical semantics interface*. Cambridge, MA: MIT Press.
- Levin, B., & Rappaport Hovav, M. (1998). Morphology and lexical semantics. In A. Spencer & A. Zwicky (Eds.), *Handbook of morphology* (pp. 248–271). Oxford: Blackwell.
- Levinson, S. C. & Wilkins, D. (Eds.). (2006). *Grammars of space: Explorations in cognitive diversity*. Cambridge: Cambridge University Press.
- Mani, I., & Pustejovsky, J. (2012). *Interpreting motion: Grounded representations for spatial language*. Oxford: Oxford University Press.
- Matsumoto, Y. (1996). Subjective motion and English and Japanese verbs. *Cognitive Linguistics*, 7(2), 183–226.
- McNeill, D. (1992). *Hand and mind: What gestures reveal about thought*. Chicago and London: The University of Chicago Press.
- Moline, E., & Stosic, D. (2016). *L'expression de la manière en français*. Paris: Ophrys.
- Moncla, L., & Gaio, M. (2015). A Multi-layer markup language for geospatial semantic annotations. In *Proceedings of the 9th Workshop on Geographic Information Retrieval, GIR'15* (pp. 5:1–5:10), Paris: ACM.

- Montague, R. (1974). *The proper treatment of quantification in ordinary English*. In R. Thomason (Ed.), *Selected papers of Richard Montague* (pp. 247–270). New Haven, CT: Yale University Press.
- Muller, P., & Sarda, L. (1998). Représentation de la sémantique des verbes de déplacement transitifs directs du français. *TAL*, 39(2), 127–147.
- Nespoulous, J.-L. (1990). Linguistique, neurolinguistique et neuropsycholinguistique. In J.-L. Nespoulous, & M. Leclercq (Eds.), *Linguistique et neuropsycholinguistique: Tendances actuelles* (pp. 1–4). Paris: Société de Neuropsychologie de Langue Française.
- Nichols, J. (1986). Head-marking and dependent-marking grammar. *Language*, 62, 56–119.
- Nikanne, U., & van der Zee, E. (2012). The lexical representation of path-curvature in motion expression: A three-way path curvature distinction. In M. Vulchanova, & E. van der Zee (Eds.), *Motion encoding in language and space* (pp. 187–212). Oxford: Oxford University Press.
- Purves, R. S. & Derungs, C. (2015). From space to place: Place-based explorations of text. *International Journal of Humanities and Arts Computing*, 9(1), 74–94.
- Pustejovsky, J. (1995). *The generative lexicon*. Cambridge, MA: MIT Press.
- Retoré, C. (2014). The Montagovian generative lexicon  $\Lambda Ty_n$ : A type-theoretical framework for natural language semantics. In R. Matthes & A. Schubert (Eds.), *Proceedings of the 19<sup>th</sup> International Conference on Types for Proofs and Programs (TYPES 2013)* (pp. 202–229). Dagstuhl: Schloss Dagstuhl – Leibniz-Zentrum für Informatik.
- Sarda, L. (1999). *Contribution à l'étude de la sémantique de l'espace et du temps: Analyse des verbes de déplacement transitifs directs du français*. PhD dissertation. Toulouse: Université de Toulouse-Le Mirail.
- Šarić, L. (Ed.). (2013). Space in South Slavic. *Oslo Studies in Language*, 5(1).
- Slobin, D. I. (1996). Two ways to travel: Verbs of motion in English and Spanish. In M. Shibatani, & S. A. Thompson (Eds.), *Grammatical constructions: Their form and meaning* (pp. 195–219). Oxford: Clarendon Press.
- Slobin, D. I. (2003). Language and thought online: Cognitive consequences of linguistic relativity. In D. Gentner, & S. Goldin-Meadow (Eds.), *Language*

- in mind: Advances in the investigation of language and thought* (pp. 157–191). Cambridge, MA: MIT Press.
- Slobin, D. I. (2004). The many ways to search for a frog: Linguistic typology and the expression of motion events. In S. Strömquist, & L. Verhoeven (Eds.), *Relating events in narrative: Typological and contextual perspectives* (pp. 219–257). Mahwah, NJ: Lawrence Erlbaum.
- Slobin, D. I., Ibarretxe-Antuñano, I., Kopecka, A., & Majid, A. (2014). Manners of human gait: A crosslinguistic event-naming study. *Cognitive Linguistics*, 25(4), 701–741.
- Smith, C. (2003). *Modes of discourse*. Cambridge: Cambridge University Press.
- Soroli, E., & Hickmann, M. (2011). Language and spatial representations in French and in English: Evidence from eye movements. In G. Marotta, A. Lenci, L. Meini, & F. Rovai (Eds.), *Space in language* (pp. 581–597). Pisa: Editrice Testi Scientifici.
- Stefanowitsch, A., & Rohde, A. (2004). The goal bias in the encoding of motion events. In G. Radden, & K.-U. Panther (Eds.), *Motivation in grammar* (pp. 249–268). Berlin: Mouton de Gruyter.
- Stolova, N. I. (2015). *Cognitive linguistics and lexical change: Motion verbs from Latin to Romance*. Amsterdam & Philadelphia: John Benjamins.
- Stosic, D. (2001). *Par* et l'expression des relations spatiales en français. *Revue de Sémantique et Pragmatique*, 9/10, 75–102.
- Stosic, D. (2002). *Par* et *à travers* dans l'expression des relations spatiales: Comparaison entre le français et le serbo-croate. PhD dissertation. Toulouse: Université de Toulouse-Le Mirail.
- Stosic, D. (2007). The prepositions *par* and *à travers* and the categorization of spatial entities in French. In M. Aurnague, M. Hickmann, & L. Vieu (Eds.), *The categorization of spatial entities in language and cognition* (pp. 71–91). Amsterdam & Philadelphia: John Benjamins.
- Stosic, D. (2009). La notion de « manière » dans la sémantique de l'espace. *Langages*, 175, 103–121.
- Stosic, D., & Amiot, D. (2011). Quand la morphologie fait des manières: Les verbes évaluatifs et l'expression de la manière en français. In D. Amiot, W. De



- Mulder, E. Moline, & D. Stosic (Eds.), *Ars Grammatica. Hommages à Nelly Flaux* (pp. 403–430). Bern: Peter Lang.
- Stump, G. (1993). How peculiar is evaluative morphology? *Journal of Linguistics*, 29, 1–36.
- Talmy, L. (1983). How language structures space. In H.L. Pick, & L.P. Acredolo (Eds.), *Spatial orientation: Theory, research and application* (pp. 225–282). New York: Plenum Publishing Corporation.
- Talmy, L. (1985). Lexicalization patterns: Semantic structure in lexical forms. In T. Shopen (Ed.), *Language typology and syntactic description* (vol. 3): *Grammatical categories and the lexicon* (pp. 57–149). Cambridge: Cambridge University Press.
- Talmy, L. (1996). Fictive motion in language and “ception”. In P. Bloom, M. A. Peterson, L. Nadel, & M. F. Garrett (Eds.), *Language and space* (pp. 211–276). Cambridge, MA: MIT Press.
- Talmy, L. (2000). *Toward a cognitive semantics* (vol. I & II). Cambridge, MA: MIT Press.
- Tenny, C. (1995). How motion verbs are special: The interaction of linguistic and pragmatic information in aspectual verb meanings. *Pragmatics and Cognition*, 3(1), 31–73.
- Tenny, C., & Pustejovsky, J. (Eds.). (1999). *Events as grammatical objects: The converging perspectives of lexical semantics and syntax*. Stanford, CA: CSLI.
- Tesnière, L. (1959). *Eléments de syntaxe structurale*. Paris: Klincksieck.
- Traugott, E. C. (2008). Grammaticalization, constructions and the incremental development of language: Suggestions from the development of degree modifiers in English. In R. Eckardt, G. Jäger, & T. Veenstra (Eds.), *Variation, selection, development – Probing the evolutionary model of language change* (pp. 219–250). Berlin & New York: Mouton de Gruyter.
- Trueswell, J., & Papafragou, A. (2010). Perceiving and remembering events cross-linguistically: Evidence from dual-task paradigms. *Journal of Memory and Language*, 63, 64–82

- Tversky, B. (1996). Spatial perspective in descriptions. In P. Bloom, M. A. Peterson, L. Nadel, & M. F. Garrett (Eds.), *Language and space* (pp. 463–491). Cambridge, MA: MIT Press.
- van Eijck, J., & Kamp, H. (1997). Representing discourse in context. In J. van Benthem, & A. ter Meulen (Eds.), *Handbook of logic and language* (pp. 179–237). Amsterdam & Cambridge: Elsevier/MIT Press.
- Vandeloise, C. (1984). *Description of space in French*. PhD dissertation, University of California, San Diego. Duisburg: LAUTD.
- Vandeloise, C. (1986). *L'espace en français: Sémantique des prépositions spatiales*. Paris : Seuil.
- Vandeloise, C. (1987). La préposition à et le principe d'anticipation. *Langue Française*, 76, 77–111.
- Vandeloise, C. (1988). Les usages statiques de la préposition à. *Cahiers de Lexicologie*, 53, 119–148.
- Vandeloise, C. (1991). *Spatial prepositions: A case study in French*. Chicago, IL: The University of Chicago Press.
- Vandeloise, C. (2006). Are there spatial prepositions? In M. Hickmann, & S. Robert (Eds.), *Space in languages: Linguistic systems and cognitive categories* (pp. 139–154). Amsterdam & Philadelphia: John Benjamins.
- Vieu, L. (1991). *Sémantique des relations spatiales et inférences spatio-temporelles: Une contribution à l'étude des structures formelles de l'espace en langage naturel*. PhD dissertation. Toulouse: Université Paul Sabatier.
- Vieu, L., & Aurnague, M. (2007). Part-of relations, functionality and dependence. In M. Aurnague, M. Hickmann, & L. Vieu (Eds.), *The categorization of spatial entities in language and cognition* (pp. 307–336). Amsterdam & Philadelphia: John Benjamins.
- Vulchanova, M., & Martinez, L. (2013). A basic level for the encoding of biological motion. In C. Paradis, J. Hudson, & U. Magnusson (Eds.), *The construal of spatial meaning: Windows into conceptual space* (pp. 144–168). Oxford: Oxford University Press.
- Vulchanova, M., & van der Zee, E. (2012). *Motion encoding in language and space*. Oxford: Oxford University Press.

- Winston, M., Chaffin, R., & Herrmann, D. (1987). A taxonomy of part-whole relations. *Cognitive Science*, *11*, 417–444.
- Zlatev, J. (1997). *Situated embodiment: Studies in the emergence of spatial meaning*. Stockholm: Gotab.
- Xu, D. (Ed.). (2008). *Space in languages of China: Cross-linguistic, synchronic and diachronic perspectives*. Berlin & Heidelberg: Springer.