How motion verbs are spatial: the spatial foundations of intransitive motion verbs in French

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Introduction[1]

Many studies at the interface between syntax and semantics have shown an interest in motion verbs. This is the case with general research on the articulation between these two linguistic levels (R. Jackendoff 1983, 1990, 1996) and with more specific studies like those tackling the unaccusative/unergative opposition (B. Levin and M. Rappaport 1992, 1995) or certain aspectuo-temporal phenomena (M. Krifka 1992, 1995; C. Tenny 1995; C. Tenny and J. Pustejovsky 1999).

At the same time, a large number of analyses have dealt directly with the question of the expression of motion in language. Such research has been carried out on particular languages (e.g. for French: N. Asher and P. Sablayrolles 1995; J.-P. Boons 1987; J.-P. Boons *et al.* 1976; A. Borillo 1998; A. Guillet 1990; A. Guillet and C. Leclère 1992; B. Lamiroy 1983; D. Laur 1991; I. Peeters 2005; L. Sarda 1999; D. Stosic 2007; C. Vandeloise 1987) or takes a wider linguistic scope by trying to highlight striking typological differences in the syntactico-semantic means available for describing motion (R. Berman and D. Slobin 1994; M. Bowerman *et al.* 1995; I. Choi-Jonin and L. Sarda 2007; D. Creissels 2006; C. Grinevald to appear; M. Hickmann 2006; A. Kopecka 2006; W. Sampaio *et al.* 2009; D. Slobin 2003, 2004; D. Stosic 2002, 2009; L. Talmy 1985, 2000). These studies have in common the fact that they consider, together or separately, the whole range of elements of the utterance involved in the expression of "dynamic

space" (verbs, prepositions, postpositions, cases, particles…) and aim to explain how each element contributes to the description of motion.

All these studies —whether general, at the syntax-semantics interface, or more clearly focused on dynamic space— have brought significant progress to an understanding of the meaning components that language uses in order to refer to motion, and in the syntactic categories and structures through which these elements are encoded. More generally, they have helped to better understand the relations between language and cognition, at least as far as the domain of space is concerned. Many new terms were coined as a result of these studies 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. But, as is usual in the social sciences —among others in linguistics—, distinct terms often designate identical phenomena while a single denomination can, according to the author, refer to different realities. In order to illustrate the latter situation, let us note, for instance, that the term "path" which in R. Jackendoff's (1983, 1990) work usually applies to **motion** carried out with respect to a landmark (reference/ground entity) is defined by L. Talmy (2000 (vol. 2): 25) as "the path followed or **site occupied** by the Figure object with respect to the Ground object"[2] (hence, the latter notion covers dynamic configurations as well as static ones). A direct consequence of this great variety of approaches and tools is that one may find it very difficult to define in a convergent way what constitutes a motion process or eventuality in language and cognition.

The main goal of this paper is precisely to better characterize what language considers as a motion process/eventuality. This issue is mostly tackled through the analysis of French intransitive verbs denoting autonomous motion, including the predicates sometimes called "indirect" transitive in the French grammatical tradition (however, some examples of "direct" transitive verbs are used in order to widen the discussion and demonstration). Within this general issue, the following questions especially need to be answered: What linguistic test(s) is/are available, in French, as a heuristic for singling out an instance of motion?; What kinds of semantic properties make these eventualities distinct from other categories of processes, in particular spatial ones?

For the characterization of eventualities that French classifies as motions, we will ensure that two conditions are fulfilled. First, the motion eventualities will be defined on the basis of their spatial properties and not through their aspectual characteristics (inner/lexical aspect or Aktionsart: C. Smith 1991; Z. Vendler 1957; C. Vet 1994; C.Vetters 1996). In this respect, it is quite usual for scholars to

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[2] Our emphasis. However, dynamic and static paths can be distinguished via the "Vector component" of a Path (L. Talmy 2000).

draw a distinction between verbs that express manner of motion and verbs that denote true motion (motion in the strict sense) without providing precise and operational spatial criteria but resorting, instead, to aspectual properties (atelicity *vs.* telicity). Relating spatial and aspectual properties of motion processes is not excluded but this task will have to be applied at some later stage, on the basis of a clear spatial characterization.

A second requirement will be to define each of the notions adopted as precisely as possible, checking their coherence with other interacting concepts within the characterization of a motion as well as their compatibility with identical or similar notions involved in other domains of linguistic space. For example, if a motion eventuality is grasped in terms of "change of location/place", one will not only have to set out what one means by location/place (and to prove the effectiveness of change of locations in specifying motion): it will also be necessary to check that this definition is compatible with locations/places possibly arising in static descriptions. For instance, if the object *vs.* location opposition that seems to underlie the behaviour of some static markers leads to consider that a sofa, a carpet or a bucket are categorized as objects in language and cognition[3], it will be hard to claim that any change of location is involved in utterances such as *Max est venu sur le canapé/tapis* 'Max came onto the sofa/carpet' or *Le chat est entré dans le seau* 'The cat went into the bucket'. One may, alternatively, consider, as R. Jackendoff (1983, 1990) and many other scholars do, that the application of a static preposition to its nominal object (landmark entity) operates as a function that determines a place/location or "spatial" region (the PP *sur le canapé/tapis* would introduce a location): however, the many studies carried out by C. Vandeloise (1986, 2001) and our own work with L. Vieu (M. Aurnague 2004; M. Aurnague and L. Vieu 1993; L. Vieu 2009) showed that such a modelling of the semantics of spatial prepositions is often erroneous and ineffective. Restricting ourselves to spatial configurations denoted by the preposition *sur*, the functional relation of support that usually holds between the target (localized entity) and the landmark is fundamental: it can neither be reduced to the geometrical notion of contact (L. Talmy 2000), nor to a region defined with respect to the sole landmark, in which the target would be included (R. Jackendoff 1983, 1990).

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[3] In French, the rule proposed by C. Vandeloise (1988) in order to account for the (static) locating uses of the preposition *à* seems to select landmark entities that can be characterized as "specified locations" (M. Aurnague 1996, 2004). **A location is a material entity determining a space portion, which is fixed in a given frame of reference** (M. Aurnague *et al.* 2007). Unlike specified locations (e.g., *Max est au village* 'Max is in the village'; *Le chat est au grenier* 'The cat is in the attic'), objects are ruled out as landmarks of *à* (locating use): *Max est sur le/*au canapé* 'Max is on/at the sofa'; *Le chat est dans le/*au seau* 'The cat is in/at the bucket'. On the preposition *à*, see also M. Goyens *et al.* (2002).

The first section of this paper deals with the notion of change of placement and the class of verbs it covers. The central concept of our proposal —change of relation— is the subject of the second section in which we examine its interaction and combinatory with the notion of change of placement. We then turn (Section 3) to the well-known question of the transformation of certain changes of placement into changes of relation (and placement) and try to highlight the most striking properties of the verbs (of change of placement) giving rise to such a conversion. Finally (Section 4), we characterize the semantic content of the main intransitive motion verbs of French, using the above-mentioned conceptual tools (changes of relation and placement). This categorization provides a preliminary bridge between the purely spatial characterization of motion predicates and their aspectual properties.

1. Change of placement

Frames of reference have been widely used over the last few years in order to account for localization processes based on orientation and orientational properties (cf., for instance, S. Levinson 1996). The notion of framework or frame of reference involved in this study is a different one as it aims at evaluating and grasping a more "basic" parameter, namely the existence of a motion or change of placement. A frame of reference will usually consist in a set of entities —making up or not a whole— that maintain stable spatial relationships among them (in particular in terms of distance). Thus, the motion or immobility of a target is assessed in a "relative" way, with respect to a frame of reference which is often an encompassing and larger element.[4]

Verbs of change of posture refer to the modifications in position or placement affecting the parts of a whole. These modifications are assessed within the framework corresponding to the whole entity and do not imply that the latter is also moving with respect to a larger frame of reference. This lack of change of placement of the whole entity entails that sentences containing double PPs like *de (Det) N1 Prep (Det) N2* 'from (Det) N1 Prep (Det) N2' or measurement PPs of the form *Prep Detnum Nmeasure* (1-2) often need an encompassing motion eventuality (at least a change of placement: transportation, procession, etc.) to be inferred, within which the change of posture takes place and denotes a state,

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[4] L. Talmy (2000 (vol. 1): 312-313) rightly observes that the relations between a target/figure and a landmark/ground have to be evaluated with respect to a third entity —the reference frame—, in particular the fact that the target is possibly moving whereas the landmark remains stationary.

activity or iterative event.[5] When the cotext or the situational context does not make such an encompassing eventuality available, the corresponding sentences sound definitely odd.

(1)   ?(?)*Max s'est assis/étendu de la maison au village*[6]
        'Max sat/lied down from the house to the village'
(2)   ?(?)*Max s'est agenouillé/incliné pendant deux kilomètres*
        'Max knelt down/bowed for two kilometres'

Adding a PP headed by *à travers* 'through' is another way of characterizing changes of posture, even more efficiently. As shown in M. Aurnague (2000) and D. Stosic (2002, 2007, 2009), the preposition *à travers* localizes a target within the landmark introduced by its nominal object and implies that the trajectory of a mobile target is extended enough with respect to the whole landmark ("constraint of minimal extension/coverage"). Utterances which combine a verb of change of posture and an *à travers*-headed PP are usually rejected (3-4). Indeed, building an interpretation with an overall motion eventuality seems more difficult here.[7]

(3)   ??*Max s'est assis/étendu à travers le jardin*
        'Max sat/lied down through the garden'
(4)   ??*Max s'est agenouillé/incliné à travers le sentier*
        'Max knelt down/bowed through the path'

Verbs of change of posture are not central in this work and are mainly examined with a contrastive purpose. These predicates would require a deeper analysis, in connection with research on the expression of static posture (C. Grinevald 2006; T. Kuteva 2001; M. Lemmens 2002) and on positional markers found out in languages like Tzeltal (P. Brown 1994).

Unlike changes of posture, some predicates denote a motion which consists in a change of placement outside and beyond the frame of reference corresponding to the target: we call them verbs of change of placement.[8] The encompassing

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[5] This inference directly follows from the introduction of the PPs/adverbials and applies to any kind of eventuality that does not denote a change of placement (e.g., *Max a lu/dormi de la maison au village* 'Max read/slept from the house to the village').

[6] Besides full grammaticality (no specific marking) and full ungrammaticality (*), two intermediate levels of acceptability are distinguished in this paper: "?" indicates that a sentence is accepted by some —but not all— speakers; "??" indicates that a sentence is unacceptable, except perhaps in a specific context. Brackets (e.g., (?), ?(?)) are intended to indicate that a sentence may lie between two levels of acceptability.

[7] An explanation of this fact could consist in observing that the two kinds of PPs previously mentioned directly or indirectly convey the notion of spatial measure, whereas PPs headed by *à travers* do not.

[8] The term "change of placement" has been chosen in order to avoid the words "place" and "location" which, as explained elsewhere (see Introduction and Section 2), convey ontological presuppositions that are not required by

frame of reference is usually the terrestrial/earth's framework, possibly represented by some immediate contextual element(s).

Combining double PPs like *de (Det) N1 Prep (Det) N2* 'from (Det) N1 Prep (Det) N2' or measurement PPs of the form *Prep Detnum Nmeasure* with verbs of change of placement results in sentences which are fully understandable (5-6). Unlike changes of posture, there is no need here to infer an encompassing motion eventuality because a change of placement is already introduced by the verb.

(5)   *Max a couru/marché de la maison au village*
        'Max ran/walked from the house to the village'
(6)   *Max a trottiné/rampé pendant deux cents mètres*
        'Max trotted along/crawled for two hundred metres'

Once again, the most reliable test consists in examining utterances that include PPs headed by *à travers* (7-8). These spatial descriptions are fully acceptable and this can be explained by the previously mentioned fact, namely that the verb refers to a motion which is not limited to the target's framework but constitutes a change of placement in the earth's frame of reference.

(7)   *Max a couru/marché à travers le jardin*
        'Max ran/walked through the garden'
(8)   *Max a trottiné/rampé à travers le sentier*
        'Max trotted along/crawled through the path'

Intransitive verbs of placement can highlight manner of motion (e.g., *boiter* 'to limp', *galoper* 'to gallop, to hare', *glisser* 'to slide (along)', *marcher* 'to walk', *nager* 'to swim', *voler* 'to fly'), the mode or instrument of that motion (e.g., *canoter* 'to boat', *patiner* 'to skate', *surfer* 'to surf'), the structure of the moving target (e.g., *cavalcader* 'to cavalcade', *patrouiller* 'to patrol', *processionner* 'to walk in procession') as well as the lack of a goal (or, at least, the fact that the motion does not primarily aim at reaching some goal: *flâner* 'to stroll', *errer* 'to wander', *se promener* 'to go for a walk'). They can also point out the form of the motion/trajectory (e.g., *papillonner* 'to flit around', *spiraler* 'to spiral', *zigzaguer* 'to zigzag along'), its direction (e.g., *avancer* 'to advance, to move forward', *grimper* 'to climb', *monter* 'to go up') or even its speed (e.g., *bomber* 'to belt

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motion processes (place, location *vs.* object) and, furthermore, are often associated with telic motions. Up to now, the expression "verb/event of placement" has mostly appeared in studies dealing with causative verbs of placement and removal, but the motions that the target undergoes in these processes are somewhat compatible with the kind of autonomous motion described here (in particular, the target can move or be moved within the same landmark). Finally, note that the term "verb of placement" was already used by D. Wunderlich (1991) for referring to **autonomous** (non causative) motion, although this expression was applied to a different class of predicates.

along', *foncer* 'to tear along', *traînailler* 'to dawdle').[9] This is only an illustration of the rich semantics of verbs of change of placement and not an exhaustive list. As observed in B. Lamiroy (1983), most of these verbs of change of placement select the auxiliary *avoir* 'have'.[10] The terrestrial frame of reference with respect to which the change of placement is evaluated being implied, it is not represented in the argument structure of the verb and we are, quite naturally, faced with intransitive predicates (more exactly inergative predicates: see below).

2. Change of relation (and placement)

Now we turn to the class of motion verbs which is probably the most typical and widely-known: e.g., *aller + Prep* 'to go + Prep', *arriver* 'to arrive', *atteindre* 'to reach', *entrer* 'to go in, to enter', *partir* 'to leave', *se rendre* 'to go to', *sortir* 'to go out', *traverser* 'to cross'. Many analyses distinguish these predicates from simple changes of placement on the basis of their aspectual properties (inner aspect, Aktionsart), the former eventualities being telic (accomplishments or achievements) and the latter ones atelic. As highlighted in M. Aurnague (2000), M. Aurnague and D. Stosic (2002) and D. Stosic (2002, 2007), these two categories of verbs behave differently with respect to their association with a PP headed by the preposition *par* 'by'. Whereas the utterances containing a verb of change of placement seem hardly acceptable to many present speakers or are, at best, interpreted through the "imprecise localization" use of *par* (9-10)[11], the verbs examined in this section lead to the "path" interpretation of the preposition,

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[9] With regard to transitive verbs of change of placement, they can express the motion of a target searching the landmark (e.g., *fouiller* 'to search', *explorer* 'to explore'), the simple "coverage" of the landmark by the mobile target (the manner, speed or form of the motion being possibly emphasized: *arpenter* 'to pace', *sillonner* 'to travel to every corner') or the motion's direction (e.g., *descendre* 'to go down', *longer* 'to border'). It is very likely that the change of placement would be evaluated with respect to the encompassing frame of reference determined by the subcategorized landmark.

[10] As shown further on (Section 3), directional predicates do not really call this observation into question, at least in a diachronic perspective. However, some changes of placement are expressed by pronominal verbs which are the result of a detransitivation process (e.g., *se déplacer* 'to move around', *se traîner* 'to drag o.s.', *se promener* 'to go for a walk').

[11] This use of *par* is very rare and literary nowadays but it was widespread in the 19th century. Frequent occurrences of this interpretation still appear in texts of the first half of the 20th century. Here are two examples (Frantext textual base): *Après avoir erré par les rues...* 'After having wandered through the streets…' (R. Crevel, *Mon corps et moi*, 1925); *Au crépuscule... la reine de théâtre et Mr Godeau étaient allés se promener par la ville* 'At twilight… the theatre queen and Mr Godeau had gone for a stroll through the city' (M. Jouhandeau, *Mr Godeau intime*, 1926).

in which the entity denoted by its nominal object is supposed to "connect" different elements of the target's trajectory (11-12).

(9) ?*Max a couru/marché par (tout) le bois/les coteaux*
     'Max ran/walked through the wood/the hills'
(10) (?)*Max a déambulé/erré par (toute) la ville/les rues piétonnes*
     'Max strolled/wandered through the city/the pedestrianized streets'
(11) *Max est sorti/arrivé par la rue St François*
     'Max went out/arrived by the rue St François'
(12) *Max est venu à Toulouse par Bordeaux*
     'Max came to Toulouse via Bordeaux'

These kinds of descriptions (with *par*-headed PPs) reveal the spatial properties of the verbs under examination and show the need to provide a spatial characterization of the corresponding categories, not only an aspectual one. Indeed one often encounters spatial properties of verbs which are barely defined, or used as simple labels: the "directed motion" concept used for characterizing the telic motion predicates analysed here (B. Lamiroy 1983; B. Levin 1993; B. Levin and M. Rappaport 1992, 1995) is a good example of such inaccurate categorizations, as direction is neither a specific nor an obligatory component of these predicates' meaning (we saw that several verbs of change of placement refer to directions). Other categorizations are based on more precise definitions but without this guaranteeing their adequacy. This is the case with approaches like R. Jackendoff (1983, 1990) which often associate the landmark of a static or dynamic description with a space portion or region (usually called place/location) in which the target is localized (cf. Introduction). N. Asher and P. Sablayrolles (1995) consider that the telic motion verbs under study express changes of locations. They extend the region-based approach and provide a landmark entity with a rich set of zones in order to make finer distinctions among motion predicates (in terms of "sources" and "goals"): zone of inner-halo, zone of inner-transit, zone of contact, zone of contact-transit, zone of outer-halo, zone of outer-transit, zone of outermost-halo.

Three main criticisms can be made of these approaches. First, and as mentioned in the introduction, they do not take into account the functional content of spatial markers which, according to many studies (in particular C. Vandeloise's work (1986, 2001)), plays a central part in their functioning.[12] Second, despite the

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[12] In relation to this, it was recalled that the semantics of the preposition *sur* 'on' mainly relies on the functional notion of support. Similar claims can be made for "containment" and *dans* 'in' and "social routines" and the non (strictly) locating uses of *à* 'at' (C. Vandeloise 1986, 1988, 2001; L. Vieu 1991). The functional content of the main spatial prepositions requires modelling them in a true "relational" way (relation between target and landmark) and not as mere functions applying to the landmark.

possible (indirect) integration of the concept of contact, they strongly tend to reduce the geometrical aspects of spatial prepositions to the sole relation of inclusion.[13] Finally, the true nature of the postulated entities (regions) and their linguistic anchoring are rarely examined and this can lead, among other things, to an increase of elements (see N. Asher and P. Sablayrolles' zones) or to characterizations that may entail clashes or incompatibilities between the expression of static and of dynamic space. In this respect, we previously highlighted (see Introduction) the fact that there is no reason to consider entities like sofas, carpets and buckets as locations in dynamic descriptions, whereas they do not have this status in static localization.

In his syntactico-semantic classification of French motion verbs, J.-P. Boons (1987) brought to the fore a very interesting and operative notion —that of change of basic locative relation— which went rather unnoticed and was not often used in following studies (except in P. Muller and L. Sarda 1998). Thanks to this notion, the author distinguishes "initial and final unipolar verbs" (also called "causative" verbs of motion; e.g., *adosser* 'to stand/lean (back) against', *défricher* 'to clear', *dévisser* 'to unscrew, to undo'), from predicates which, according to him, constitute real motions or displacements: e.g., *chasser* 'to chase out/away', *enfourner* 'to put in the oven/kiln', *hisser* 'to hoist'. Thus, a predicate like *adosser* is not governed by the notion of change of basic locative relation as one can put the back of a cupboard against a wall with which the cupboard was already in contact (i.e., the surface initially in contact with the wall was *not* the cupboard's back): the negated and then asserted relation —*être adossé à* 'to stand (back) against'— is not a basic one (unlike *être contre* 'to be against'). On the other hand, a verb like *enfourner* certainly calls for a change of basic locative relation as the successive negation and assertion of *être dans* 'to be in' underlies its semantics. It quickly appears that this concept allows us to set aside the processes of change of placement from the category of predicates we are trying to characterize: for instance, *marcher/se promener (dans le parc)* 'to walk/stroll (in the park)' does not bring into play any change of basic locative relation.[14] On the contrary, a predicate such as *entrer* 'to go in, to enter' definitely implies a change of basic locative relation. Although it constitutes an important advance towards a

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[13] We already pointed out that, in region-based approaches, configurations of contact (and support) are often grasped through space portions determined by the landmark. We will see that a relation-based approach better differentiates the role of contact and inclusion in motion processes. Note that our analysis of spatial markers (M. Aurnague 2004; M. Aurnague and L. Vieu 1993; L. Vieu 1991, 2009) does not dismiss geometrical properties but rather links up the geometrical, functional and pragmatic components which determine their behaviour.

[14] Many changes of posture can also be excluded according to the same criterion: for instance, *s'asseoir sur le tapis* 'to sit on the carpet' entails the negation and subsequent assertion of the relation *être assis sur* 'to be sitting on', not of the preposition *sur* 'on'.

linguistically motivated classification and analysis of motion verbs, this notion turns out to be insufficient. Indeed, and because of their functional content, some basic spatial relations can be denied and then asserted (or the reverse) without implying any real motion. This occurs, for instance, in sentence (13) (use of *à* 'at' calling for "spatial routines" (C. Vandeloise 1988)) which may very well refer to a situation in which Max, sitting on a swivel chair/stool[15], settles alternately in front of his piano and in front of his work table without moving around. In the same way (14), Max releasing the dish that he was holding above the table and in slight contact with it (it is only after the "release" that the table supports the dish) entails a change of basic spatial relation (*sur*) without any displacement having taken place. These observations do not totally disqualify J.-P. Boons' proposal: they merely suggest that the semantics of the telic motion verbs analysed in this section has to be grasped by combining the notions of change of relation and change of placement, something that we now intend to do.

(13)   *Max s'est installé à son piano/sa table de travail*
        'Max settled down at his piano/his work table'
(14)   *Max a mis le plat sur la table*
        'Max put the dish on the table'

The association of these two notions gives rise to a rich combinatory based on two distinct referents: the terrestrial frame of reference with respect to which the change of placement is evaluated (cf. Section 1) and the landmark entity — whether explicitly mentioned in the spatial description or not— used for assessing a possible change of relation. As stressed above, changes of placement do not entail, by themselves, any change of basic locative relation. Moreover, we have seen that some changes of relation applying to functional properties are not accompanied by a change of placement. A deeper examination indicates that some changes of basic locative relation involving both their functional and geometrical content cannot be clearly considered as changes of placement. This shows up, in particular, in the interpretation of the verbs *se poser* 'to land, to settle' and (possibly) *se percher* 'to perch' which, when applied to birds, usually imply the combined introduction of contact and support. Sentence (15), for instance, reveals that, despite the change of basic locative relation (geometrical and functional properties of *sur* 'on'), the process described is not really categorized by language and cognition as a change of relation and placement (PPs headed by *par* are not easy to accept). Thus, changes of relation with respect to the landmark entity which associate contact and support seem not to imply a change of placement

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[15] Located between a piano and a work table whose main axes/dimensions are parallel.

with regard to the terrestrial frame of reference. On the contrary, changes of basic spatial relations grounded in the notions of inclusion/containment (preposition *dans* 'in') definitely go with a change of placement (16).[16]

(15)   ?? *L'oiseau s'est posé/perché sur la maison par le jardin*
        'The bird landed/perched on the house through the garden'

(16)   *L'oiseau est entré dans la maison par le jardin*
        'The bird went into the house through the garden'

It seems to us that, to sound more acceptable, (15) needs a particular context in which, for example, the accessibility to the house is made difficult. The landing eventuality would thus be reinterpreted/accommodated so that it would integrate the "approach" to the landmark and add a change of placement to the sole change of spatial relation.

The combined effect of change of relation and change of placement in obtaining dynamic descriptions that license the integration of a *par*-headed PP, is further illustrated by the fact that many predicates of simple change of relation can co-occur with such PPs when they are associated with the verb *aller* 'to go' in a direct infinitival construction (17). As will be sketched out in the conclusion, these infinitival constructions, thoroughly studied by B. Lamiroy (1983), naturally involve a change of relation and placement (hence the licensing of *par*). A very interesting point is that the motion verb of the main clause is only compatible with a predicate denoting a change of relation in the direct infinitival clause if the latter does not also express a change of placement (see (17-18) as well as **Max est parti se rendre à Paris* 'Max left and went to Paris'). Thus, sentences with *par*-headed PPs (15-16) and direct infinitival constructions form a kind of complementary distribution that allows us to better identify those predicates which refer to a veritable change of relation and placement.

(17)   *L'oiseau est allé se poser/percher sur la maison (par le jardin)*
        'The bird went and landed/perched on the house (through the garden)'

(18)   **L'oiseau est allé entrer dans la maison (par le jardin)*
        'The bird went and went into/entered the house (through the garden)'

Even when they are both present in the verb's semantics, the change of relation and/or change of placement can sometimes be relegated to a second position

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[16] A similar contrast appears in the following sentences with a fitted cupboard reachable from two rooms: ??*Le papillon s'est posé sur le placard par la chambre* 'The butterfly landed on the cupboard through the bedroom' *vs. Le papillon est entré dans le placard par la chambre* 'The butterfly went into the cupboard through the bedroom'.

because other aspects of the process are emphasized and especially the affectedness of the landmark. For instance, (19-20) show that the possible change of relation and placement is less accessible in the transitive uses of *(s')infiltrer* 'to infiltrate, to percolate' and *pénétrer* 'to penetrate, to soak' than in their intransitive counterparts (it is more difficult to associate them with a *par*-headed PP). This contrast is even stronger with the pair of transitive verbs *transpercer* 'to pierce, to go through' and *traverser* 'to cross, to go through' (21-22), the former stressing the affectedness of the landmark whereas the latter more clearly points out a change of relation and placement.[17]

(19) *L'eau a ?infiltré/?(?)pénétré le mur par le jardin*
'The water infiltrated/penetrated the wall through the garden'

(20) *L'eau s'est infiltrée/a pénétré dans le mur par le jardin*
'The water percolated/soaked into the wall through the garden'

(21) ??*Le missile a transpercé la forteresse par le dépôt de munitions*[18]
'The missile pierced the fortress by the ammunition dump'

(22) *Max a traversé la place par le jardin public*
'Max crossed the square by the park'

In accordance with the observations made in B. Lamiroy (1983), a significant proportion of intransitive (or "indirect" transitive) verbs of change of relation and placement select the auxiliary *être* 'be': e.g., *aller + Prep* 'to go + Prep', *arriver* 'to arrive', *s'échapper* 'to escape', *entrer* 'to go in, to enter', *partir* 'to leave', *parvenir* 'to get to, to reach', *se rendre* 'to go to', *sortir* 'to go out'. However, one should bear in mind that an appreciable number of such predicates combine with the auxiliary *avoir* 'have': e.g., *aboutir* 'to end up', *accéder* 'to reach, to get to', *débarquer* 'to disembark, to land', *déguerpir* 'to clear off', *émigrer* 'to emigrate' (cf. as well *Vchange-of-placement + Prep* structures in Section 3). These syntactic

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[17] The ammunition dump in (21) is supposed to be a part of the fortress (situated within the building) in a way parallel to the park in (22) which is surrounded by the square.

Note that, in spite of presupposing the affectedness of the landmark, the sentence ?*Le missile a traversé la forteresse par le dépôt de munitions* 'The missile crossed the fortress by the ammunition dump' seems more acceptable than the parallel sentence with *transpercer* (21). Moreover, we would point out that a transitive verb like *traverser* denotes changes of relation with respect to particular parts/zones of the landmark (and changes of placement evaluated within this landmark's frame of reference). As pointed out by L. Sarda (1999), these parts can be identified by Internal Localization Nouns such as *côté* 'side' or *bord* 'edge' (M. Aurnague 1996, 2004).

[18] Even when the utterance sounds better (e.g., use of an Internal Localization Noun as the nominal object of *par*: ?*Le missile a transpercé la forteresse par le haut* 'The missile pierced the fortress by the top'), the landmark introduced by *par* seems to refer to the whole trajectory (of the target) or to its initial phase and not to its medial or final phase. It is thus closer to the interpretations of *par* called "area of impingement" (e.g., *Max a saisi la casserole par le manche* 'Max took hold of the saucepan by the handle') or "inchoative process" (e.g., *Le torchon a brûlé par le haut* 'The towel burned from the top') in D. Stosic (2002, 2007).

properties and those previously highlighted for changes of placement partly coincide with the assumption put forward in B. Levin and M. Rappaport (1992, 1995) according to which (intentional) "verbs of manner of motion" —here (intentional) changes of placement— would be unergatives (external subject predicates; *avoir* diagnosis) whereas "directed motions" —here changes of relation and placement— would be expressed by unaccusative predicates (the subject is an internal object; *être* diagnosis) (D. Perlmutter 1978).

3. When change of relation adds to change of placement

The association of verbs of change of placement and spatial PPs —usually "final" ones— has given rise to many studies owing to the specific properties possibly displayed by these constructions concerning aspect (they can be telic as opposed to the atelic aspect of mere changes of placement: M. Krifka 1995; C. Tenny 1995) and the unaccusative/unergative opposition (possible unaccusative structure whereas most changes of placement are unergative: B. Levin and M. Rappaport 1992, 1995). From a more markedly typological point of view (R. Jackendoff 1990; D. Slobin 2003, 2004; L. Talmy 2000), it has been claimed that languages like English expressing the "Path component" of motion by means of satellites ("satellite-framed languages") rather than through the verb have a particular proclivity towards this kind of dynamic descriptions (23-24). On the contrary, languages such as French that encode the Path component within the verb ("verb-framed languages") would be much more reluctant to describe changes of relation and placement through this construction ((25-26) can only denote a change of placement). Most studies maintain that such a construction is very unusual in the languages under consideration and, apart from occasional studies such as (V. Fong and C. Poulin 1998), this claim has rarely been questioned.

(23)   *Max walked into the meadow*
(24)   *Max skated under the bridge*
(25)   *Max a marché dans le pré*
          'Max walked in the meadow'
(26)   *Max a patiné sous le pont*
          'Max skated under the bridge'

If expressing a change of relation and placement by means of a verb of change of placement and a PP is unquestionably more constrained in French than in English, this construction is, nevertheless, much more productive than has been claimed. This is what we are trying to show in this section by highlighting the semantic

properties of the verbs of change of placement that admit this kind of construction and interpretation.

The first category of verbs of change of placement that are likely to combine with a PP in order to describe a change of relation and placement groups together predicates underlining the speed of a motion. This is the case with *courir* 'to run', *galoper* 'to gallop, to hare' and, perhaps, *trotter* 'to trot along' (27) as well as with *foncer* 'to tear along' or *filer* 'to dash (by)' (28). As usually acknowledged, the two interpretations of the considered sentences can be distinguished by the syntactic function of the PP which can have the status of a mere modifier (adjunct of the sentence, of the VP…; change of placement) or constitute a true complement of the verb (change of relation and placement).

> (27) *Max a couru/galopé/(?)trotté à la cuisine*
>   'Max ran/galloped/trotted in(to) the kitchen'
> (28) *Max a foncé/filé dans le couloir*
>   'Max tore/dashed in(to) in the corridor'

In a second group, we find the verbs *ramper* 'to crawl' and *se traîner* 'to drag o.s.' indicating (at least for human beings) that the change of placement needs a particular effort to be made. This effort aims at overcoming certain "forces" — external to the target or stemming from it[19]— that act against the fulfilment of the motion and make it more difficult. As previously, these verbs combined with appropriate ("final") PPs give rise to dual interpretations, one of which involves a change of relation and placement:

> (29) *Max a rampé sur la terrasse*
>   'Max crawled on(to) the terrace'
> (30) *Max s'est traîné au salon*
>   'Max dragged himself in(to) the lounge'

The directional predicates of change of placement make up the third group of verbs that, together with a PP, can refer to a change of relation and placement: e.g., *avancer*, 'to advance, to move forward', *dégringoler* 'to tumble', *descendre* 'to go down', *dévaler* 'to tear down', *grimper* 'to climb', *se hisser* 'to heave o.s. up', *monter* 'to go up', *reculer* 'to (move) back'. As suggested in Section 1, we postulate that these verbs denote first and foremost changes of placement (motion along a particular direction: our analysis agrees with L. Sarda's (1999) proposal on this point). This is illustrated by utterances (31-32) which do not imply any change of relation with respect to the landmarks introduced by their PPs.

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[19] Frictions, relative strength of the body parts involved in the motion in comparison with the weight/inertia of the rest of the body, etc.

Diachronic data (33-34) confirm this membership in the class of changes of placement because, as many directional predicates still do today (e.g., *avancer, reculer, dégringoler, dévaler, grimper*), the verbs *monter* and *descendre* seem to have selected more frequently the auxiliary *avoir* 'have' in earlier periods, a situation that lasted in part until the middle of the 20th century in literature[20]. In this connection, we saw (Sections 1 and 2) that, without being restricted to changes of placement, the recourse to *avoir* constitutes a heavy tendency of these predicates (a property which is probably correlated with unergative structures (B. Levin and M. Rappaport 1992, 1995)).

(31)   *L'expédition a avancé à travers la forêt*
        'The expedition advanced through the forest'
(32)   *Le chamois a dévalé/est descendu le long du ravin*
        'The chamois tore/went down along the ravine'
(33)   *La terre qui a monté autour de ses murs, les débris dont on l'a encombré, en ont fait une crypte étroite, resserrée, nauséabonde...* (M. du Camp, *Le Nil, Egypte et Nubie*, 1854)
        'The earth that went up around the walls, the debris it was cluttered with, turned it into a narrow crypt, confined and nauseating…'
(34)   *Monsieur votre argentier a descendu comme un chat le long des murs...* (H. de Balzac, *Maître Cornelius*, 1846)
        'Your dear intendent of finance went down like a cat along the walls..'

Examples (35-36), which again relate to the verbs *monter* and *descendre*, indicate that their uses involving *avoir* (and an appropriate PP) could, in the 19th century, also refer to a change of relation and placement (other examples are available, among which appear several constructions of the form *a descendu de la voiture* 'got out of the car'). Nevertheless, the early spreading of constructions in which directional predicates select the auxiliary *être* 'be' can probably be attributed to this kind of sentences denoting changes of relation and placement (see above the link with unaccusativity). Be that as it may, in a more synchronic and central perspective, it turns out that present-day directional verbs can, together with an appropriate PP and somewhat independently of the auxiliary selected (*avoir* or

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[20] Here are two further examples: *Le tas des ouvriers a monté dans la rue, et ces maudits s'en vont...* 'The group of workers went up in the street, and these damned are going away…' (A. Rimbaud, *Le Forgeron*, 1870*); Il a monté encore, un peu plus avant dans le bois* 'He still went up, a bit further forward in the wood' (M. Genevoix, *Le Lac fou*, 1942).

être), denote a change of placement as well as a change of relation and placement (37-38; compare with (31-32)).[21]

>   (35) *…il a monté jusqu'au gros chêne* (G. Sand, *Les Maîtres sonneurs*, 1865)
>   '… he went up to the big oak'
>
>   (36) *…la peinture de son visage a descendu sur la pourpre* (G. Flaubert, *La Tentation de Saint-Antoine*, 1849)
>   '…his face's paint went down onto the purple'
>
>   (37) *Max a avancé dans le couloir*
>   'Max advanced in(to) the corridor'
>
>   (38) *Le chamois a dévalé/est descendu dans le ravin*
>   'The chamois tore/went down in(to) the ravine'

As might be foreseen, certain predicates indicating the direction of motion combine this element with the notion of speed (e.g., *débouler/dégringoler* 'to tumble', *dévaler* 'to tear down') or opposition to a force (e.g., *grimper* 'to climb', *se hisser* 'to heave o.s. up'). In their non-intentional uses, *dégringoler* and *dévaler* also involve forces, but this notion operates differently in the process as the force carries the target along.

This carrying along by a force is precisely the fourth and last property that we have brought to the fore among the factors conditioning the transformation of a change of placement into a change of relation and placement. This concept underlies the semantics of verbs such as *couler* 'to flow', *dégouliner* 'to trickle, to drip', *déraper* 'to slip, to skid', *glisser* 'to slide' or *rouler* 'to roll' which imply that one or more forces, mainly external to the target, cause the motion. These external forces (gravity, impact/impetus, obstacle, etc.), possibly associated with internal properties of the static or mobile target (form or consistency, momentum, etc.) check its initial "balance" and carry it along in a motion that is not of its own. Note that the notion of balance of a static or dynamic target used here and, more generally, the role allocated to forces, go beyond L. Talmy's theory of "force dynamics" (L. Talmy 2000). It is for this reason that we do not adopt his terminology (in particular the agonist/antagonist opposition). Besides the notion of being carried along by a force, some kind of linearity of the motion ("linear oriented motion") is often implied by the semantics of the verbs examined, a point

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[21] When the two auxiliaries are still possible (e.g., *(s')avancer* to advance, to move forward', *(se) reculer* 'to move back'), it seems that the use based on *être* points up to a lesser extent mere progression than the use with *avoir*: e.g., (?)*L'expédition s'est avancée* (= *a progressé*) *à travers la forêt* 'The expedition advanced/progressed through the forest'; compare with (31). Conversely, the latter is sometimes less inclined to emphasize motion with respect to a landmark or reference entity (canonical interaction (C. Andersson 2007; C. Vandeloise 1986)): *Max* (?)*a avancé/s'est avancé devant le maire* 'Max advanced/went towards the mayor'.

which confirms L. Talmy's assumption that forces encoded in language mostly act along "a straight line".

As in the previous cases, motion caused by a force external to the target can give rise to an interpretation grounded on a change of relation and placement, provided that the predicate is associated with an appropriate "final" PP (39-42).

(39) *La peinture a coulé/dégouliné sur le carrelage*
      'The paint trickled/dripped on(to) the tiles'
(40) *Max a glissé dans le ravin*
      'Max slid in(to) the ravine'
(41) *La voiture a dérapé sur le bas-côté*
      'The car skidded on(to) the verge'
(42) *La balle a roulé sur le sol*
      'The ball rolled onto the ground'

At this point, four properties have been established which enable verbs of change of placement to describe, in association with an appropriate PP, a change of relation and placement: speed of motion, (intentional) opposition to a force, direction (linear oriented motion) and carrying along by a force. We have already indicated that the predicates examined are likely to involve several of the properties highlighted. These four properties have in common the fact that they suggest the aim or the "tendenciality" of the motion, the corresponding changes of placement having, indeed, the potentiality to "tend" towards a landmark or a goal. As a first approximation, we will consider that these features or properties make up a family resemblance underlying the concept of tendenciality. The presence of this notion in the semantics of a predicate of change of placement —via one or several of the properties enumerated— only leads to the description of a change of relation and placement in specific constructions (including an appropriate PP), but it is nevertheless a fact that this characteristic of verbs is an essential condition for the emergence of such dynamic descriptions.

As we have seen, and in accordance with other recent analyses (A. Kopecka 2009), French has many more predicates of change of placement that are likely to appear in descriptions of change of relation and placement than is usually assumed. Thus the contrast that, from this point of view, arises between verb-framed and satellite-framed languages does not rely on the lack (or virtual lack) *vs.* presence of such constructions but in their constrained *vs.* less or unconstrained emergence. Unlike English (and other satellite-framed languages)

that do not call for it, French (and probably other verb-framed languages as well) provides, as we have seen, a good basis for analysing the notion of tendenciality.[22]

4. Towards a classification of intransitive verbs of French

In order to further analyse the way changes of placement and changes of relation interact in the expression of motion, we now examine the different kinds of processes which French intransitive predicates of change of relation and placement denote. This classification is intended to capture, as precisely as possible, the spatio-temporal properties of the verbs and lays the foundations from which the usual categories of Aktionsart (inner aspect: C. Smith 1991; Z. Vendler 1957; C. Vet 1994; C. Vetters 1996) should be deduced. We selected for this analysis the most representative verbs[23] of the lists included in D. Laur (1991), which themselves follow from the inventories made in J.P. Boons (1991), J.P. Boons *et al.* (1976), M. Gross (1975) and A. Guillet (1990)[24]. The verbs and verbal locutions that only refer to a change of placement (e.g., predicates of manner of motion; cf. Section 1) or to a change of relation (e.g., predicates based on the relation of contact/support; cf. Section 2) were obviously removed from these lists, by means of the tests previously highlighted and, in particular, the possibility of adding a *par*-headed PP to a dynamic description.

The concept of polarity of motion already mentioned plays an important part in this classification, as it does in the studies of French motion verbs just indicated. It is given a precise definition based on the notion of change of relation. A motion (in the strict sense, that is to say a change of relation and placement) is said to be "initial" if the change of basic locative relation that underlies it consists in the assertion of the relation and then its negation (the "positive" information is initial:

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[22] Today, the verb *aller* combined with a PP mainly enables us to describe changes of relation and placement. As the possible selection of the auxiliary *avoir* 'have' by the Old French verb *aler* shows (*aler* denotes the fact of walking; cf. B. Lamiroy 1983 and H. Nordahl 1977), we are faced with a change of placement giving rise to the kind of construction studied in this section. Yet *aller* does not fulfil the criteria highlighted for tendenciality. Its high semantic generality within changes of placement seems to confer on it the status of light/support verb which, combined with a preposition (in particular *à* 'at'), would make up a true verbal locution. It is thus a somewhat specific case (see the next section).

[23] Among the possible predicates of change of relation and placement that were set aside, let us point out the following groups: *dérocher* 'to fall off', *dévisser* 'to fall off'; *jaillir* 'to spurt out, to gush forth', *sourdre* 'to rise, to spring up'; *s'approcher* 'to approach', *s'éloigner* 'to move/go away'; *s'écarter* 'to draw aside, to part', *se pousser* 'to move/shift over'; *bifurquer* 'to bear, to turn', *se déporter* 'to swerve', *dévier* 'to veer/turn (off course)', *obliquer* 'to turn, to bear'.

[24] A. Guillet (1990) was published as A. Guillet and C. Leclère (1992).

r $\cdots\triangleright$ ¬r).[25] Conversely, this polarity is "final" when the assertion of the basic locative relation follows its negation (final positive information: ¬r $\cdots\triangleright$ r). According to the same principle, a "medial" change of relation will be characterized by a positive information (assertion of the relation) preceded and followed by the negation of the underlying relation (¬r $\cdots\triangleright$ r $\cdots\triangleright$ ¬r): unlike most approaches that do not clearly define the notion of medial polarity, we thus claim that, with the exception of verbal locutions like *couper par* 'to cut across' or *passer par* 'to go through', very few French intransitive verbs denoting changes of relation and placement can be considered as medial.

The observation of the processes denoted by the intransitive verbs of change of relation and placement selected led us to distinguish four categories of initial predicates and four categories of final predicates. The first category is mainly represented by the verb *partir* 'to go (away), to leave' —and, to a lesser extent, today, by *s'en aller*—, referring to an **independent initial change of relation** (note also the colloquial variants *se barrer* 'to go (away), to clear off' and *se tirer* 'to go (away), to push off'). These verbs are first characterized by the fact that the underlying basic locative relation —asserted and then denied— cannot be reduced to the sole configurations of inclusion/containment (Max can perfectly well leave his home having been first on the terrace or in front of the door) and often seems to fit better with the situations denoted by the preposition *à* 'at' in its static localizing uses[26] (C. Vandeloise 1988). The second characteristic of this category of predicates lies in the fact that they are restricted to the initial change of relation (and placement) and do not include in their semantics the "subsequent" motion to which the final PP refers, when added to the sentence (see Table 1; the subsequent motion corresponds to the event e'). The sentence *Max est parti à l'université à 8 heures* 'Max left for the university at 8 o'clock' is thus spatio-temporally equivalent to the description in discourse *Max est parti à 8 heures. Il allait à l'université* 'Max left at 8 o'clock. He was going to the university' ("Background" relation). Besides the modification by a temporal adverbial headed by *en* 'in', several imperfective utterances strengthen the statement that the processes underlying this kind of verbs are centred on the change of relation and placement

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[25] The symbol '$\cdots\triangleright$' used here and subsequently has nothing to do with implication or logical consequence. It simply points out the transition from one state (in our case, a basic (static) spatial relation) to another: s1 $\cdots\triangleright$ s2. This transition is an event (e) whose relations with the corresponding states (s1 and s2) can be formally represented in the following way (the relation of "abutment" $\supset\subset$ indicates immediate temporal precedence (A. Kamp and U. Reyle 1993)): s1 $\supset\subset$ e $\supset\subset$ s2.

[26] C. Vandeloise showed that this use of *à* often allows the speaker to introduce a (distant) landmark operating as a reference point for the search for the target, the latter entity not necessarily being located in the space portion defined by the landmark.

alone. This is the case, among others, with sentences in the present tense —*Max part à l'université* 'Max is leaving for the university' is in principle only usable when the change of relation (and placement) occurs— and with sentences in the imperfect including a temporal subordinate clause (43). The eventuality introduced by the subordinate clause of (43) is thus contemporary with the initial change of relation rather than with the motion that may follow (unless one reinterprets/accommodates the sentence by substituting *aller/se rendre à* 'to go to' for *partir à*).[27]

(43)   *Max partait à l'université lorsqu'il s'est mis à pleuvoir*
        'Max was leaving for the university when it started to rain'

S'échapper 'to escape', *s'enfuir* 'to run away', *se sauver* 'to run away' —as well as the more colloquial verbs *se carapater* 'to skedaddle', *se cavaler* 'to clear off', *se tailler* 'to beat it', *se trotter* 'to dash (off)', etc. — introduce an **extended initial change of relation** and, on the basis of this criterion, constitute a second category of predicates. As in the previous group of verbs, the process described is fulfilled as soon as the change of relation takes place (*Pollux le chien s'est échappé du restaurant* 'Pollux the dog escaped from the restaurant' is true immediately the target left the landmark) and their semantic content seems, here again, to be centred on the initial change of relation and placement. However, other linguistic tests calling for utterances in which these verbs appear with a final PP point to the possibility, for these constructions, to refer to a motion subsequent to the initial change of relation and placement: addition of a temporal adverbial headed by *en* 'in', sentences in the present tense coinciding with the change of relation or at a later point in time, sentences in the imperfect with a temporal subordinate clause (44: the event evoked by the subordinate clause can take place during the subsequent motion).

(44)   *Max s'enfuyait/se sauvait au village lorsqu'il s'est mis à pleuvoir*
        'Max was running away to the village when it started to rain'

A further piece of evidence of the ambivalent behaviour of extended initial changes of relation is provided by perfective utterances denying the fulfilment of a subsequent motion, as their interpretation may be less immediate than for independent initial changes of relation: ?*Max s'est enfui/sauvé au village mais il n'y est jamais arrivé* 'Max ran away to the village but he never got there' *vs. Max*

The autonomous character of the subsequent motion also explains why final PPs introduced by prepositions or prepositional locutions other than *pour* 'for, to' or *à destination de* 'for, to' (particularly *à* 'at') have a meaning equivalent to the latter's. Hence the inexorable development of constructions of the form *partir + à* throughout the twentieth century, in spite of numerous "prescriptive" warnings.

est parti à l'université mais il n'y est jamais arrivé 'Max left for the university but he never got there'.

The predicates making up this second class differ from independent initial changes of relation in that they highlight, quite uniformly, the speed of the motion and, at the same time, emphasize the target's desire to avoid the control that the landmark exerts over it. It is, very likely, these elements of the verbs' semantics —and particularly the speed dimension— that give them the capacity to occasionally describe a change of placement subsequent to the initial change of relation and placement. When a final PP is present, and in accordance with what was highlighted in Section 3 (tendenciality), a final change of relation is added to this change of placement. Consequently, the reference to a subsequent motion is not, in our view, a constitutive element of this class of verbs but has to be seen, rather, as a "side effect" ascribable to the presence of very specific properties in their semantics (hence the term "extended initial change of relation"; cf. Table 1).

The third category corresponds to verbs characterized as **double changes of relation with initial saliency**. It mainly includes the predicates *déménager* 'to move (house)', *émigrer* 'to emigrate', *s'exiler* 'to go into exile' and *s'expatrier* 'to expatriate o.s.' whose semantic content calls for a kind of "typing" of the landmark with respect to which the initial change of relation and placement takes place (accommodation/residence, country, homeland…). However, the process denoted brings into play a final landmark of the same type as the initial one and we are thus faced with a double change of relation and placement. The initial change of relation (and placement) seems, nevertheless, more "salient" than the final one in the semantics of these predicates and this mostly follows from their morphological properties (*dé-* and *é-/ex-* prefixes).

The initial intransitive verb *sortir* 'to go out' that explicitly refers to the basic locative relation of inclusion/containment (*dans*) is the main representative of the fourth class singled out (**inclusion/containment-type initial change of relation**).[28] Although we are again faced with an initial change of relation —the assertion of inclusion/containment precedes its negation—, another representation of the process is conceivable because the negation of the basic locative relation *dans* may be expressed via the prepositional locution *à l'extérieur de* 'at the exterior of, outside' (cf. Table 1): this alternative representation thus consists of

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[28] The relation underlying *sortir* seems, most of the time, to correspond to *dans* 'in' rather than to the prepositional locution *à l'intérieur de* 'at the interior of, inside' (hence the reference to containment and not to inclusion alone). In particular, the target can be partially included/contained in the landmark, a configuration that *dans* is able to capture unlike *à l'intérieur de* (C. Vandeloise 1986; L. Vieu 1991). Moreover, let us point out that some uses of *sortir* that call for the (underlying) prepositions *à* 'at' (C. Vandeloise 1988) or *chez* 'at x's home/house/place' instead of *dans* have been identified. In this case, the semantic content of *sortir* is close to that of *partir* and implies that the relation/localization between the target and the landmark is stable or habitual.

two "positive" pieces of information and a parallel can be established, on this ground, with certain uses of verbs like *franchir* 'to cross, to overstep' or *traverser* 'to cross' (cf. Endnote 17). However, from a cognitive point of view, the boundaries delimiting (at least partly) the interior of the landmark and the control possibly exerted on the target through the relation of containment seem to make that entity more individualized and salient than the exterior of the landmark. As a consequence of these geometrical and functional differences, we give priority to the representation of the process based on the assertion and the following negation of the basic locative relation *dans*.[29]

Table I. Categories of intransitive verbs of change of relation and placement

Initial intransitive verbs	Final intransitive verbs

Independent initial change of relation: *partir*
 	
 []
 e   e'
 r(t,l) ⋯▷ ¬r(t,l)   ch-plmt
 + ch-plmt   + ch-rel
	Final change of relation with integrated prior motion: *aller à, se rendre, venir*
	
	]⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯]
	        e e'
	    ch-plmt + ¬r(t,l) ⋯▷ r(t,l)
	                         (+ ch-plmt)

Extended initial change of relation: *s'échapper, s'enfuir*
 	
 []⋯⋯⋯⋯⋯⋯⋯⋯⋯▷
 e   ch-plmt   e'
 r(t,l) ⋯▷ ¬r(t,l)   ch-rel
 + ch-plmt   (+ ch-plmt)
	Final change of rel. with presupposed prior motion: *arriver, parvenir*
	
	]⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯]
	        e e'
	  / ch-plmt ↩ / ¬r(t,l) ⋯▷ r(t,l)
	                         + ch-plmt

Double change of relation with initial saliency: *déménager, émigrer* [⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯] e (ch-plmt) e' <u>r(t,l1) ⋯▷ ¬r(t,l1)</u> + ¬r(t,l2) ⋯▷ r(t,l2) <u>+ ch-plmt</u> + ch-plmt	**Double change of relation with final saliency:** *immigrer* [⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯] e (ch-plmt) e' r(t,l1) ⋯▷ ¬r(t,l1) + <u>¬r(t,l2) ⋯▷ r(t,l2)</u> + ch-plmt <u>+ ch-plmt</u>
Inclusion/containment-type initial change of relation: *sortir* alternative repres. [] [] e e r(t,l) ⋯▷ ¬r(t,l) r(t,l) ⋯▷ r'(t,l) + ch-plmt + ch-plmt r = incl./cont.	**Inclusion/containment-type final change of relation:** *entrer* alternative repres. [] [] e e ¬r(t,l) ⋯▷ r(t,l) r'(t,l) ⋯▷ r(t,l) + ch-plmt + ch-plmt r =incl./cont.

t: target, l: landmark; square brackets delimit the semantic content of the verbs; underlining indicates the saliency of the change of relation and placement.

The fifth category of intransitive verbs —the first category of final verbs— includes those predicates whose semantic content can be characterized as a **final**

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[29] For similar reasons, it seems to us that a representation of this category of processes that would call for the negation and following assertion of the relation *à l'extérieur de* would be even more questionable/problematic.

change of relation with integrated prior motion. *Aller à* 'to go to' (and, more generally, *aller* + *Prep* 'to go + Prep'), *se rendre* 'to go to' or *venir* 'to come', as well as the more colloquial verbs *s'abouler* 'to come', *s'amener* 'to come along' or *rappliquer* 'to come, to turn up' belong to this class.[30] We consider that the semantic content of these verbs includes a change of placement followed by a final change of relation (and, possibly, of placement) (cf. Table 1). It is, most of the time, the perfective aspect of the tense used (e.g., "passé composé"/perfect) that leads us to assign an initial temporal boundary (and, indirectly, an initial change of locative relation) to the verbal process.[31] Some constructions which combine a verb of change of placement emphasizing the speed or the opposition to a force with a PP and which are likely to denote a change of relation and placement (see Section 3) are semantically very close to the verbs of this category, so that this kind of motion eventuality is probably the most extensive among the processes set out in this paper.

Arriver 'to arrive', *aboutir* 'to end up', *accéder* 'to reach, to get to' and *parvenir* 'to reach, to get to' belong to the same category of verbs, as their semantic content consists in a **final change of relation and placement with presupposed prior motion**. Whereas these predicates refer to a final change of relation (and placement) without denoting a prior change of placement (unlike the verbs of the previous class), their semantics nonetheless "presupposes" the existence of such a motion.[32] This presupposed change of placement explains a

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[30] The real or conceptual proximity to the final landmark induced by the deictic character of *venir* can sometimes entail some kind of saliency of the final change of relation. Nevertheless, we claim that the semantics of this verb is basically different from that of *arriver* 'to arrive at, to get to'. See below.

   The presence of a change of placement prior to the final change of relation in the semantics of this category of verbs (see below) makes the incorporation of an *en*-headed PP triggering a temporal delimitation of this prior motion eventuality natural: *Max est allé/s'est rendu/est venu à l'université en 10 minutes* 'Max went/came to the university in 10 minutes'. This contrasts with initial changes of relation and placement (e.g., independent initial changes of relation) for which the incorporation of such a temporal PP is only understandable if an eventuality — which is not a motion: e.g., getting ready for leaving— is introduced before the initial change: *Max est parti à l'université en 10 minutes* 'Max left for the university in 10 minutes'.

[31] Tenses or moods that are able to display the eventuality as a whole (e.g., "passé simple"/past historic, future, imperative) can also provide these motion processes with an initial boundary and other elements of the sentence (e.g., spatial or temporal PPs) can play a part too. The lack or, at least, the non saliency of an initial change of relation characterizing most of these processes comes to light, for instance, when one uses aspectual verbs like *commencer* 'to start, to begin'. In particular, the "progressive" reading of the change of relation and placement — as opposed to its iterative reading— seems to be harder to get than with verbs which include a clear initial boundary: *Après l'appel (téléphonique) de Luc, Max a commencé à aller/venir au village* 'After Luc's call, Max started to go/come to the village' *vs. Après l'appel de Luc, Max a commencé à redescendre au/regagner le village* 'After Luc's call, Max started to go back down/go back to the village'.

[32] A provisional formal definition of the semantic content of these verbs could take the following form ($\supset\subset$ is immediate temporal precedence; t: target, l: landmark): V(e',t,l) $\equiv$def $\exists$e ch-rel-plmt(e',t,l) $\wedge$ ch-plmt(e,t) $\wedge$

well-known aspectual property of these verbs, that is their ability to behave as "achievements" (possibility of adding a temporal adverbial headed by *à* 'at') and as "accomplishments" as well (addition of an adverbial headed by *en* 'in') (45). This property has, in fact, a spatial counterpart —more basic and, as far as we know, rarely highlighted (M. Aurnague 2000)— since the preposition *par* 'by' can indiscriminately introduce an entity (a "secondary landmark") directly connected to the final landmark (and which is thus involved in the final change of relation) or more distant from it and located within the prior trajectory of the target (change of placement) (46).

> (45) *Max est arrivé à l'université à 10 heures/en 10 minutes*
>   'Max arrived at the university at 10 o'clock/in 10 minutes'
> (46) *Les réfugiés sont parvenus en France par l'Aragon/le Portugal*
>   'The refugees got to/reached France by Aragon/Portugal'

By presupposing the existence of a change of placement preceding the final change of relation (and placement) denoted, the predicates of this class noticeably differ from independent initial changes of relation (e.g., *partir* 'to go (away), to leave') and from extended initial changes of relation (e.g., *s'enfuir* 'to run away'): we saw, indeed, that a possible subsequent change of placement was external to the semantic content of these verbs although they could, sometimes, indirectly refer to it as a side effect. From this point of view, these initial predicates are not really symmetrical with regard to the final verbs examined here, as is often claimed.

The category of **double changes of relation with final saliency** (e.g., *immigrer* 'to immigrate') is parallel to the category evoked when we examined initial intransitive verbs. As previously, it is based on the notion of typing of the initial and final underlying landmarks and therefore calls for a double change of relation (and placement).

The final class brought to the fore includes the verbs denoting an **inclusion/containment-type final change of relation** (e.g., *entrer* 'to go in, to enter', *pénétrer* 'to enter, to penetrate'). Here again, it seems that the preposition *dans* 'in' is the most suitable for capturing the underlying basic locative relation. However, the initial and final changes of relation based on inclusion/containment are not strictly symmetrical, as their combination with initial or final PPs and, in a more indirect way, their transitive uses expressing an action on an entity tend to show.

$\supset \subset (e, e')$. As can be seen, the change of placement whose existence is at issue is in the scope of the change of relation (and placement) but only the latter is denoted by the verbal predicate.

Although the term "classification of verbs" was often used up to now, what is proposed here is, more exactly, a spatial characterization of the motion processes which the predicates considered can denote (this is an important point on which we agree with C. Vetters (1996)). As we have seen, this characterization is based on the two notions used for capturing the spatial properties of motions (cf. Sections 1 and 2), namely the notion of change of placement and that of change of relation, as well as the combinatory possibilities to which they give rise.

The different processes mainly differ by the fact that they include one or two changes of relation (sometimes accompanied by a concomitant or "joint" change of placement) which can themselves be preceded or, more rarely, followed by a change of placement. We have been careful to determine the status of these — prior or subsequent— changes of placement according to whether they are fully integrated into the semantics of the verb (they are thus directly denoted by the marker), are simply presupposed by the semantic content or are not encoded at all there. In the latter case, however, the verb is sometimes able to describe such changes of placement but, as we saw, this reference is only indirect and results from a side effect due to specific properties of the verb's semantics.

In the present state, the categorization obtained reveals an important asymmetry/dissymmetry between initial and final processes[33] because initial predicates of change of relation usually do not indicate the existence of a subsequent change of placement in their semantic content, whereas final changes of relation can integrate a prior change of placement or presuppose it. More generally, and except for the predicates that call for types or, to a lesser extent, for the relation of inclusion/containment, it turns out that the semantic content of the intransitive verbs analysed comprises a single (initial or final) change of relation (and placement). The motion process corresponding to the whole sentence can sometimes involve a second change of relation (with an opposite polarity) but it is introduced, in a compositional fashion, by other elements and, in particular, by means of spatial PPs and/or perfective tenses.[34] This second change of relation thus adds, at the sentence level, to the change of relation directly denoted by the verb.

As we previously did for polarity, we complete this section by trying to define more precisely the notion of "path". The data highlighted (in particular regarding the combination with *par* 'by') seem to indicate that a verb denotes a path if it

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[33] The few verbs whose semantic content is based on typing of the landmark(s) are not really concerned by this remark on asymmetry.

[34] Note that whatever the linguistic material added, independent initial changes of relation (and placement) never refer to a final change of relation. As previously stressed, the addition of a final PP introduces a motion eventuality that has to be distinguished from that denoted by the verb.

introduces at least a change of relation and a change of placement. These changes can be concomitant (if the change of relation entails a change of placement) or successive (change of placement subsequent or prior to the change of relation). The whole path eventuality constructed within the sentence can very well be limited to an initial or final change of relation and placement and to a landmark of the same polarity: e.g., *Max est parti de chez lui à 8 heures* 'Max left home at 8 o'clock'; *Max est arrivé à l'université à 10 heures* 'Max arrived at the university at 10 o'clock'. We differ, on this point, from most studies on motion in language (included some of our own previous work) which assume that a path systematically includes an initial and final landmark and even, sometimes, a medial landmark. Contextual and world knowledge as well as pragmatic principles (in particular, the fact that an entity is always located somewhere) can result in the introduction of additional relations and landmarks[35], but these elements have a pragmatic status and need to be carefully distinguished from the relations and landmarks actually identified in the linguistic description.

5. Conclusion

Taking intransitive motion verbs of French as its main subject, this study has attempted to highlight the spatial properties characteristic of their semantic content.

We first looked into the concept of change of placement and at the corresponding class of verbs by making clear that these changes of placement are implicitly evaluated within the terrestrial/earth's frame of reference (Section 1). The examination of the predicates characterized elsewhere as denoting a telic motion or a change of location (among others) showed that the notion of change of basic locative relation (J.-P. Boons 1987) was a better candidate for grasping their spatial content —provided, however, that it is combined with the notion of change of placement (Section 2). As emerged in the analysis, a basic locative relation is usually expressed by a preposition or a prepositional locution and we saw that certain changes of basic locative relation (with respect to a landmark) do not imply a change of placement in the terrestrial frame of reference. The interaction between these two notions was then studied by observing the well-known constructions which associate a verb of change of placement and a final PP in order to describe a change of relation and placement (Section 3). Finally, the analysis of the main intransitive verbs of change of relation and placement led us

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[35] Thus, the existence of a "positive" relation with a landmark can be stated on the basis of "negative" linguistic information (negation of a basic locative relation).

to distinguish several categories of processes according to the way these two notions are organized in their semantic content (Section 4). At the same time, we were able to clarify certain notions which play an important role in the study of motion verbs, such as the polarity of a change of relation or the concept of path.

The proposed analysis has, in our opinion, several kinds of consequences. Beyond the data exclusively drawn from French, and taking the more general viewpoint of space in language and cognition, the fact that certain changes of basic locative relation do not imply any concomitant change of placement would seem to constitute an important finding. This is the case with the configurations based on the notion of support/contact, but this phenomenon also seems to involve some transitions from partial inclusion/containment (of a target in a landmark) to total. It would be interesting to determine whether these differences between basic spatial relations are specific to French or if, as we believe, they have a more general character and apply, in particular, to other verb-framed languages.

As far as the syntax-semantics interface is concerned, it seems to us that the argument structure of motion predicates —and probably their subcategorization frame— should reflect the fact that few of them select two landmarks (initial and final; cf. Table 1).

Finally, and as was underlined a number of times, we maintain that the properties relating to the inner aspect of verbs have to be deduced from their spatial properties, and not the reverse. The articulation between spatial or spatio-temporal properties and aspectual ones should be facilitated by the fact that the categories of processes highlighted (cf. Table 1) seem to basically fit the general schema(ta) proposed in order to account for the internal structure of eventualities (H. Kamp and U. Reyle 1993; M. Moens and M. Steedman 1988; C. Smith 1991; C. Vet 1994). The detailed observation of verbs of change of relation and placement and their spatial content has allowed us to bring to light certain properties that were little noticed and commented on in previous work on inner aspect. As an example, it has been shown that specific elements of some initial verbs' semantic content (extended initial changes of relation) enable them to describe, under particular conditions, a motion that is subsequent to the initial change of relation they intrinsically denote. The possibility for a predicate to identify a process subsequent to the transition/culmination characterizing its semantics and the properties that govern such a phenomenon have, as far as we know, rarely been brought to the fore.

To conclude, we now present several linguistic examples illustrating other concrete repercussions and extensions of our work. These data are related to a phenomenon mentioned in Section 2, namely the compatibility between verbs in direct infinitival constructions whose main predicate is a motion verb (B. Lamiroy

1983). We make the assumption that these constructions by themselves introduce a final change of relation and placement with respect to a landmark which is either explicitly designated or not. The verb of the main clause can be a predicate of change of relation and placement (47) or a change of placement underlain by the notion of tendenciality (48):

(47)   *Max est allé/venu se promener (dans le parc)*
        'Max went/came and strolled (in the park)'
(48)   *Max a couru s'asseoir (sur la chaise)*
        'Max ran and sat down (on the chair)'

As example (18) shows (*aller entrer*), these constructions constrain quite drastically the kind of motion verb appearing in the infinitival clause. We believe that the interactions between change of relation and change of placement outlined in this work are likely to explain, to a large extent, the compatibilities/incompatibilities between the verbs within these structures. In order to illustrate this proposal, we focus on main verbs denoting a final change of relation and placement and, more particularly, on *aller + Prep* 'to go + Prep' and *venir* 'to come'.[36] The landmark —whether expressed or not— corresponding to the change of relation and placement introduced by the construction as a whole usually coincides with the landmark associated with the verb of the infinitive (B. Lamiroy 1983): the possible combinations between predicates thus largely seem to depend on the compatible *vs.* incompatible character of changes of relation and changes of placement stated with respect to this entity (and to the terrestrial frame of reference). The verb of the infinitive is compatible with that of the main clause if it denotes a change of placement (47), a change of basic locative relation (17: *aller/venir se poser*) or if it does not involve any of these changes (48). On the other hand, an infinitival clause that both denotes a change of relation and a change of placement is not acceptable (18: *aller entrer* but also *aller se rendre* 'to go and to go to', *aller parvenir* 'to go and to reach/get to'). In other words, the change of relation and placement that the main verb introduces in these constructions precludes the expression of another change of relation and placement in the infinitival clause.

Certain predicates (usually transitive) introducing changes of relation and placement seem not to conform to the stated rule: e.g., *Le ballon est venu traverser la rue* 'The ball came and crossed the street'. But that is not so because, contrary to the verbs previously mentioned (e.g., *se rendre* 'to go to', *parvenir* 'to reach, to get to', *entrer* 'to go in, to enter'), they involve changes of relation and

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[36] As emphasized by B. Lamiroy (1983), these verbs are specially interesting in the constructions studied because they behave like aspectual semi-auxiliaries and admit non animate/intentional subjects.

placement which are limited to the landmark, the change of placement being, very probably, assessed within the frame of reference constituted by this entity (cf. Endnotes 9 and 17). Besides the cases already mentioned (change of placement alone, change of relation alone, neither of these two notions, change of relation and placement limited to the landmark), the reference to the affectedness of the landmark (and/or, possibly, of the target) enables some motion verbs —used in an appropriate context— to be incorporated into the infinitival clause of the constructions under consideration: (?)*Le voleur*[37]/?(?)*Le prêtre est allé pénétrer dans la sacristie* 'The thief/priest went and entered the sacristy'. Very sharp distinctions can be made at this stage and some predicates (e.g., intransitive uses of *pénétrer* and *s'infiltrer* 'to infiltrate, to percolate through': see the example above and (20)) seem to lie in between the expression of a change of relation and placement and of affectedness, one aspect or the other being chosen according to the construction used (*par*-headed PPs, direct infinitival constructions).[38]

These remarks on direct infinitival constructions further illustrate the operative character of the notions brought to the fore in order to capture the spatial properties of motion verbs. They confirm their validity beyond the linguistic phenomena dealt with in this work and, in particular, the addition of a *par*-headed PP.

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[37] Here, the affectedness of the landmark (and/or the target) conveyed by the verb's semantics is activated and "forwarded" by the target *le voleur* (the thief "violates", so to speak, the sacristy). Similar contexts are attested in corpuses and on the web: *…le roi ayant voulu s'assurer si le jardinier faisait bonne garde, sortit de son palais sans escorte et s'en alla pénétrer dans **l'enclos réservé*** '…the king wishing to know whether the gardener was keeping guard, left the palace without escort and went and entered the private enclosure' (E. Huber, *Etudes indochinoises*, 1905) ; *…ce soir le chasseur prit son fusil... et alla pénétrer dans **l'antre du Terrible** !* '…that night the hunter took his shotgun… and went and entered the Terrible's den' (http://board.ogame.fr/index.php?page=Thread&threadID=516464).

[38] To complement this overview, let us say that the unacceptability of constructions whose infinitival clause calls for an initial verb is not restricted to predicates denoting a change of relation and placement: **Max est allé se lever de la chaise* 'Max went and got up from the chair'; **Le tableau est allé tomber/se décrocher du mur* 'The painting went and fell/unhooked from the wall'. This unacceptable character probably follows from a more general constraint that rules out the use of a main verb indicating the (initial) negation of a relation with the landmark ($\neg r \cdots \rhd r$), while the other predicate asserts the existence of such a relation (verb of the infinitival clause: $r \cdots \rhd \neg r$).

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Summary

This paper aims to bring out the spatial properties of motion eventualities by focusing on French intransitive motion verbs. After examining changes of posture and changes of placement, we introduce the concept of change of basic locative relation (J.-P. Boons 1987) in order to accurately grasp the telic processes usually characterized as changes of location. The complex combinatory possibilities as between changes of relation and changes of placement are then illustrated by pinpointing the factors that condition the use of predicates of change of placement in utterances denoting changes of relation and placement (the notion of tendenciality). Finally, a categorization of French intransitive verbs of change of relation and placement is proposed, which is based on the way these two notions interact in their semantics.

Keywords: motion verbs, inner aspect, ontology of spatial entities, change of placement, change of basic locative relation, spatio-temporal structure, polarity, path, *par*-headed PPs, direct infinitival constructions

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