FUNCTIONAL CONTRASTS IN SPATIAL MEANING

Ignasi Navarro i FERRANDO

Abstract

It is accepted that prepositions primarily refer to the domain of physical space in terms of objects and their locations (topological relations). Everyday language, however, reveals that not only topological relations, but also dynamic and functional relations between entities are expressed by these lexical units. We discuss the functional patterns expressed by the English prepositions *at*, *on,* and *in*. Contrasts are looked for in colloquial expressions, such as *at a job, on a job* and *in a job*.

We argue that each of these prepositions expresses a particular functional relation, which becomes relevant for distinguishing meaning in those contexts where topology or dynamic patterns are not focussed on. In the case of *at,* a functional relation of operation is posited, so that the trajector is conceptualized in a position that allows for operation in relation to the landmark. As for the relation expressed by *on*, the trajector has control over the situation and uses the landmark as support in order to keep that control. Finally, *in* indicates that the trajector is controlled by the landmark, and this may occur in two ways: either the landmark protects the trajector from external agents or prevents it from free movement.

We conclude that prepositional polysemy incorporates these functional patterns. Our hypothesis raises the question whether these functional relations have extended metaphorically from topological configurations or whether they have appeared independently from embodied human interactive patterns associated to particular topologies. Is the origin of functional patterns to be found in topological and dynamic relations, or have they emerged independently? Alternatively, have these three modes developed simultaneously in both ontogenetic and diachronic development?

1. INTRODUCTION

Native speakers of any language are puzzled when asked for reasons or causes of idiomatic usage in their language, and the use of English prepositions is a clear example of this. Speakers of English "sleep in beds", "travel on trains", and "socialize at parties"; yet they also lie on beds as they sleep, are in trains as they travel, and enjoy themselves in parties as they are at them. However, the conventions of the language tend not to favour the latter forms of expression. Why? There may not be a straightforward answer yet. In recent years, however, a great deal of evidence has been brought to light from the field of Cognitive Linguistics showing that the traditional – and widely held – view of spatial semantics in terms of mere geometrical or topological parameters is not enough to describe prepositional semantics.

The meaning of English prepositions has been the object of study of semanticists for over two decades within the framework of Cognitive Linguistics[1]. Nevertheless, there is still a lack of general agreement on formalization of their referential potential. Cognitive linguistic theories of spatial meaning aim primarily at offering a general view of spatial semantics (Talmy, 1983, 2000; Sihna & Thornseng, 1995) or focus on polysemy patterns and sense extension (Hawkins, 1984; Brugman, 1988; Lakoff, 1987; Dewell, 1994; Sandra & Rice, 1995; Rice, 1996). However, the use of spatial prepositions as the linguistic expression of a great variety of situations is not yet understood. Computational models of spatial expressions (e.g. Regier, 1996) are restricted to scenes consisting of abstract

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geometrical shapes. Studies like Herskovits' (1986) show that it is problematic to formalize spatial semantics in terms of elementary geometrical notions, such as point, line, plane, surface or volume. In this case, a virtually unlimited number of object- and situation-specific constraints must be specified in lexical entries. Moreover, some spatial terms convey meaning that is not based on topological information but has to do with knowledge about how referent objects can function in particular situations. For example, the sentence *John is at the piano* (versus *John is by the piano*), not only tells that John is contiguous to the piano, but also that he uses it in a particular canonical or expected way.

In this paper, we engage in the debate about whether we should consider such functional interpretations as caused by certain pragmatic principles (Herskovits, 1986) or as due to inherent semantic properties of prepositions (Miller & Johnson-Laird, 1976; Cuyckens, 1993; Coventry, 1998; Pekar, 2001; Tyler & Evans, 2003). Our aim is to show that English prepositions possess semantic properties based on perceived function and, consequently, convey information about the patterns of interaction between trajector and landmark. In relation to this issue, Coventry *et al.* (2004) show empirical evidence that factors other than the relative positions of objects in Euclidean space are important in the comprehension of a wide range of spatial prepositions. The authors pose a functional geometric framework which puts "what" and "where" information together to underpin the situation-specific meaning of spatial terms. These authors' computational model for the processing of visual scenes and the identification of the appropriate spatial prepositions consists of three modules that incorporate functional information to purely visual parameters. Mirroring data from experiments with human participants, they show that the model is both able to predict what will happen to objects in a scene, and use these judgements to influence the appropriateness of given prepositions to describe where objects are located in the scene. As for the primacy of visual or topological aspects over temporal ones, Kemmerer (2005) shows that English uses the same prepositions to describe both spatial and temporal relationships (e.g. at the corner, at 1:30), but native speakers process these meanings independently. Though these space-time parallelisms have been explained by the Metaphoric Mapping Theory, which maintains that humans have a cognitive predisposition to structure temporal concepts in terms of spatial schemas through the application of a TIME IS SPACE metaphor, adults do not necessarily perform the mapping in actual speech. Evidence for the mapping hypothesis comes from (among other sources) historical investigations showing that languages consistently develop in such a way that expressions that originally have only spatial meanings are gradually extended to take on analogous temporal meanings. It is not clear, however, whether the metaphor actively influences the way that modern adults process prepositional meanings during language use. To explore this question, Kemmerer conducted a series of experiments with four brain-damaged subjects. Two subjects failed a test that assesses knowledge of the spatial meanings of prepositions but passed a test that assesses knowledge of the corresponding temporal meanings of the same prepositions. This result suggests that understanding the temporal meanings of prepositions does not necessarily require establishing structural alignments with their spatial correlates. Two other subjects performed better on the spatial test than on the temporal test. Overall, these findings support the view that although the spatial and temporal meanings of prepositions are historically linked by virtue of the TIME IS SPACE metaphor, they can be (and may normally be) represented and processed independently of each other in the brains of modern adults. Our claim in this paper will

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be that functional meaning may be processed, as well as temporal meaning, independently from topological meaning.

From a developmental perspective, Tomasello (1987) shows evidence that topological senses are not necessarily acquired before dynamic or functional uses of prepositions.

2. AN OUTLINE OF SEMANTIC STRUCTURE

Some authors have pointed out the multidimensional character of semantic structure with reference to spatial (Clark, 1973), and particularly prepositional semantics (Correa-Beningfield *et al.* 2005; Deane, 1993, 2005; Navarro i Ferrando, 1998, 2002, 2003).

According to this view, spatial polysemy can be modelled in a three-dimensional semantic structure, where three configurational modes are combined to constitute the proto-concept of a spatial term. In the language acquisition process, perception (sensory experience), action (motor experience) and interaction (functional experience) contribute to conceptual development (cf. Piaget & Inhelder, 1956; Vygotsky, 1986). Thus, a preposition can express not only the mere location of the trajector with respect to landmark, but rather a location with a particular orientation for movement and for some kind of purpose.

We can grasp this idea by looking at the following examples:

Topological mode:	(1)	The point at the centre of the circle
	(2)	The paint on the wall
	(3)	The present in the box
Dynamic mode:	(4)	Suddenly, he rushed at them!
	(5)	Come on!
	(6)	Hit him in the face!
Functional mode:	(7)	The parishioners are at church.
	(8)	The soldier is on the machine-gun.
	(9)	The prisoner is in handcuffs.

In our view, both dynamic and functional relationships are as primary as topological ones in the process of language acquisition. According to this view, their metaphorical character loses relevance, as far as the mapping (if any) is not performed in actual speech. Furthermore, we suggest that functional or dynamic meanings are incorporated in the semantic structure of the spatial term in situations of the physical domain by means of a direct bodily experience of functional interaction, prompted in turn by linguistic input (cf. Bowerman, 1996).

We introduce here a schematic account of the multimodal semantic structure of three prepositions based on Navarro i Ferrando (2002, 2003), so that the analysis of contrasts in the following sections becomes apparent. Our claim is that prepositions express a kind of interactive relationship that is independent from any geometric configuration of trajector or landmark. Rather, what is focussed on is the

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spatial/functional relationship itself. The relationship consists of three configurational modes that contribute to the construal of the situation, and which have to do with perception, action and interaction (sensory-motor and functional experience). Furthermore, the functional configuration of trajector or landmark may be relevant − for example, in displaying a functional front − because this configuration does determine the kind of interactive roles played by trajector and landmark.

In our view, the relation expressed by the preposition *at* shows a trajector and a landmark at relative positions that are defined by a dynamic axis. The trajector's functional front determines its orientation towards the landmark, so that their interaction adopts a particular directionality. The horizontal axis is prototypical in this case with respect to human trajectors' canonical position as standing on the ground. Trajector and landmark bear a topological relation of contiguity. Though contact is not discarded, perceptual contiguity does not imply it. Otherwise, a proximity relation would necessarily imply absence of contact, and therefore the relation expressed by *at* cannot be merely described as one of proximity. The kind of functional interaction expressed by *at* requires that the trajector's functional front addresses the landmark, given that their orientation follows the face-to-face pattern. Thus, in English we do not say that a person is *at a table* if his/her back is oriented towards it. The trajector's intentionality is assumed in order to use the landmark, manipulate it, or affect it. Thus, *A at B* indicates that *A* is using, manipulating or affecting *B* in the canonical way, i.e. as expected in normal circumstances in the kind of situation expressed by the prepositional phrase. This canonical construal may be defined either by the biological and physical configuration of the participants, or by cultural usages and customs of the linguistic community. Altogether, the spatial/functional relation is asymmetric. This relationship can be referred to as ENCOUNTER.

In the case of the preposition *on*, the dynamic axis of the relationship is defined by the trajector's resting side and its orientation towards the landmark. Thus, for *on* the vertical axis with respect to the human canonical position as standing on the ground is prototypical, since the human resting side corresponds to the feet soles. Thus, the motion axis (the directionality of relative positions) is prototypically defined by a line perpendicular to the ground. The trajector prototypically exerts force downwards. Therefore, the prototypical movement direction along this vertical axis will follow the up-down pattern. In the expressions *a fly on the ceiling*, or *a fly on the wall*, that axis has been rotated, but the fly still maintains its relative position with its resting side towards the ceiling or the wall. Trajector and landmark bear a topological relation of contact. Contact is always conceived of in relation to the outside part of the landmark and the resting part of the trajector. The construal implies the trajector's functional control of the situation. The trajector prototypically uses the landmark as support for self-control, motion control or control over the landmark, i.e. if one of the participants is to hold control over the other, the trajector will always control the landmark, and not vice-versa. This spatial construal may be referred to as SUPPORT.

Finally, the landmark of *in* is an entity which defines the boundaries of a region, thus determining some limits and capacity for that region. Therefore, it defines an interior space where the trajector is located. The trajector may be static within the interior region defined by the landmark, or it may move – defining a trajectory either within the interior of the landmark or from outside into it. In any case, the dynamic configuration of *in* precludes movement towards the outside of the region defined by the landmark.

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Accordingly, the access to the interior region of a container is not usually at the bottom, which would cause the trajector to fall out by the effect of gravity. Only with trajectors that are not under the effect of gravity (gas) could the exit be at the bottom of the landmark (e.g. 'smoke in the upside-down glass'). The trajector must be smaller than the landmark, resulting in a topological relation of inclusion. Perceptually, both coincide in space, so that trajector and landmark occupy the same space. Prototypically, the interior region defined by the landmark cannot be perceived from the outside, and is therefore conceptualized as part of it. The landmark is construed as an entity that both prevents the trajector from moving freely and impedes access of other entities to it. The functional roles are defined by a control relationship that may adopt two forms, reclusion or protection. The landmark always controls the trajector according to either pattern. This relationship is called ENCLOSURE.

3. FUNCTIONAL CONTRASTS IN SPATIAL *AT, ON* AND *IN*

The topological construal of prepositions has been widely discussed in the literature, whereas its functional aspects have been systematically ignored. A mere topological description cannot account for many uses of prepositions, even though these are non-metaphorical and refer to the physical domain. On the contrary, we observe that particular uses focus on one single mode of the relational construal, as shown in the examples above. Sometimes the topology of the situation allows for two of the prepositions and it is the functional mode of the construal that makes the linguistic community decide to favour one preposition over another.

Let us consider the following examples[1], where the functional relationship of the trajector addressing the landmark for operation sanctions the use of *at*, as opposed to *in*:

(10) In 1955 she was the first black person to sing at the Metropolitan Opera House, New York. (B11 947)
(11) John Kay is professor at the London Business School's Centre of Business Strategy. (AHT 198)
(12) The next week Meg had received an invitation to dinner at Martyr's Cottage. (C8T 2121)

Examples 10, 11 and 12 show evidence that the topological construal of the situation does not determine the preposition used. According to topology, the landmarks in 10, 11 and 12 are conceived of as containers since "the singer", "the professor" and "Meg" carry out their actions (singing, teaching, having dinner) within the interior of the landmark buildings. Nevertheless, *in* is not the preposition used. Therefore, the topological construal does not provide the clue for the speaker's decision to use a particular preposition. The dynamic construal is also rather weak, given that the activities expressed do not imply relevant motion – singing or having a meal are activities that require the maintenance of fairly fixed positions within the interior regions of the respective landmarks, whereas being a professor defines a state (or status) in the institution. The functional construal, on the contrary, is fully relevant in the three cases. Trajectors operate in a canonical functional relationship and make use of the landmarks, which calls for the use of the preposition *at*. The linguistic community accepts certain cultural conventions such as the fact that the Opera House is a place for singers to perform, schools are places

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for professors to carry out their activities, and restaurants hold dinner events. Thus, the function of a particular place and not its topological configuration may determine the kind of relation expressed by a preposition, as in these cases.

In the following examples[1], the use of the preposition *on* is sanctioned by the functional pattern "trajector controls landmark".

(13) Don't you have to spend any time on your ranch? (P06: 127)
(14) ...he put Seaman 2/c Donald L. Norton and Seaman 1/c William A. Rochford on the guns and told them to start shooting the moment they saw an enemy silhouette. (F02: 62)
(15) The work week of attendants who are on duty 65 hours and more per week should be reduced. (B01: 52)

Examples 13 and 14 convey a kind of situation where the trajectors ("you" and "Seamen 2/c and 1/c") have no specified contact with their respective landmarks. The topological mode (contact) does not determine the use of this preposition in this case. Rather the preposition reveals the kind of functional relationship between, on the one hand, "you" and "your ranch", and on the other hand, "both Seamen" and the "guns". The trajectors here are human beings in charge of keeping control over other entities (ranch and guns). In any case, neither contact nor a dynamic up-down pattern is specified. In turn, example 15 shows a metaphorical extension of this mode, where a non-physical entity – duty – is under control of the trajector (attendants). The metaphorical extension meets the requirement that the trajector be a person, so that the functional pattern can be maintained. Again, the metaphorical mapping can be actualized according to the functional mode only (trajector controls landmark), without any reliance on contact or up-down dynamism.

In the following examples, the landmark controls the trajector by protecting it from external agents or by preventing its free movement.

(16) There was good fortune and there was bad and Philip Spencer, <u>in</u> handcuffs and ankle irons, knew it to be a truth. (P07: 117)
(17) A man with a baby in his arms stood there pleading for his wife… (D07: 61)
(18) ... the audience is nevertheless left in the grip of the terrible power and potency of that which came over Salem. (D01: 58)

Examples 16 and 17 show physical domain construals where the preposition *in* is used without any compliance to topological or dynamic modes. Trajectors ("Philip" and "a baby") are not contained by interior regions of landmarks ("handcuffs and ankle irons" and "arms"). Instead, the functional mode governs the construal where Philip is controlled by the handcuffs and ankle irons (secluded) and the baby is controlled by the man's arms (protected). These examples show prototypical cases where the functional mode rules the use of the preposition *in*. Example 18 shows a metaphorical usage of this mode, where the trajector (the audience) is not literally "in the grip…", but emotionally under the control of the performance they are witnessing.

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In examples 10 to 18, we have seen that the use of a particular preposition may be sanctioned by trajector-landmark functional relationships. It may be the case that the same trajector-landmark pair could be construed according to either the functional mode or the topological mode. In this case, the semantic contrast might be expressed linguistically by means of a change of preposition.

In the following contrasts, one preposition emphasises a topological or dynamic mode, whereas another one emphasises a functional mode in the same context; or even, two prepositions may both emphasise different functional relationships where the topological construal is the same. Semantic contrasts are therefore not only based on the topological construal of situations. The context is crucial most of the time, because it helps reinforce functional, topological or dynamic modes.

In the following series, we signal relevant lexical items in italics. These items are part of the context and reinforce one of the three semantic modes – functional, topological or dynamic – with which the preposition expresses a trajector-landmark relationship.

At party, in party

(19) He wouldn't even *dance* with her at Gavin's party. (N02: 126)
(20) ...rent a car with the proper seating *capacity* in relation to the number of people in your party ... (E36: 72)

In example 19, the word *dance* reinforces the functional mode that allows for the construal "he at Gavin's party". No contiguity or directionality is conceptualized, but the canonical interactional pattern that calls for "people acting in a particular way at a particular kind of event". Conversely, example 20 brings about a topological construal with the help of contextual lexicon (*capacity*) that prompts the conceptualization of a container schema. Thus, "number of people" is conceived as the contents included in "party", according to the topological pattern of inclusion. We see that the same context, namely human beings as trajector and "party" as landmark may trigger different semantic modes that sanction the use of different prepositions.

At house, in house, on house

(21) Leningrad State Kirov *Ballet* chose tonight to give one of those choreographic miscellanies known as a "gala program", at the Royal Opera House (C11:24)
(22) Traffic Judge George T. Murphy, who continued his no-driving probation for another year and ordered him to spend 15 days in the Detroit *House of Correction* (A33:57)
(23) You should have gone to work today, 'stead of sneaking around *spying* on the Dronk House. (L13:20)

Examples 21 to 23 deploy a series of construals of the trajector-landmark pair: people-house, where the context assists the choice of preposition. Example 21 shows a functional construal, since Kirov Ballet, as a group of people who perform in a building that has been designed for that purpose, is topologically "in" the building. However, the kind of action that the group carries out (dancing a "gala program") gives the speaker the clue to construe the situation by using the functional mode, instead of the topological

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one, whereby the preposition *at* indicates that the trajector operates with/in/at the landmark according to conventional cultural patterns. Example 22 also shows the contribution of a functional relationship, besides the topological one. The prisoner is both topologically inside the House of Correction and functionally secluded (under control), so that both modes work simultaneously in reinforcing each other in the selection of the preposition *in*. Finally, example 23 shows that people can be on a house without climbing on top of it. In this case, the topological mode (contact) and the dynamic up-down axis lose emphasis, whereas the speaker reinforces the functional mode (control) aided by the verb *spy*.

At street, on street, in street

(24) At Jenks street, Simms said, the car skidded completely around, just missed two parked cars and *sped* in Jenks (A20:83)
(25) You can't very well sidle up to people on the street and ask if they want to buy a hot Bodhisattva. (R09:80)
(26) If you had screamed right there in the street where we stood, I could not have felt more *fear*. (G33:33)

In the case of the trajector-landmark pair: people-street, the different topological and dynamic modes play an interesting role. Firstly, in example 24 we see two prepositions used with a similar trajector-landmark pair. The construal "Simms at Jenks street" focuses on the fact that the person has arrived at that point and the participants bear a relation of contiguity. At the end of the sentence, where the dynamic mode takes over, the preposition *in* is used instead. The dynamic pattern recalls the fact that the trajector's motion is directed towards an interior region, instead of to obtain frontal encounter, as would be the case if *at* had been used. Thus, we see that the contrast between *at* and *in* is now based on the use of topological (contiguity) or dynamic (towards the interior region) modes of *at* and *in* respectively. More interesting still is the contrast between *on* and *in* in examples 25 and 26, respectively. Here, "people on the street" and "you in the street" seem to be synonymous. It seems that the choice between *on* or *in* is arbitrary in this case. We suggest, however, that the choice obeys semantic motivation. In 25, *on* is motivated by a construal that focuses on contact (people are in contact with the pavement), on the dynamic up-down axis (people's feet are supported by the pavement), but also on function, since we conceive of the situation as people visiting the shops, restaurants, etc. or going for a walk on the street. There is some feeling that those people control the situation, or carry out some activity by using the street and/or the buildings on it. If we look at example 26, the use of *in* is motivated by a different construal. The people in that situation are conceived as contained in an interior space, but also as entities out of control of the situation. This construal is reinforced by the context as far as *scream* and *fear* help to depict a scene where the trajector has lost control and where the street is seen as a hostile environment.

At sea, on sea, in sea

(27) ...the velocity of a tsunami in the open sea must be reckoned in *hundreds of miles* per hour

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(28) On the fateful day in 1896 when the great waves approached Japan, *fishermen* at sea noticed no unusual swells. ((F21:22)
(29) ...he couldn't *run a boat* on the open sea. (L19:76)

A typical construal where these three prepositions show evident contrasts occurs when they are used with the landmark "sea". Example 27 shows a clear topological construal, where the tsunami is included or contained and moves in the interior region defined by the sea. This construal is reinforced by the conception of the tsunami as an entity that belongs to the sea and is part of it. Example 29 uses the same phrase "the open sea", and the choice of preposition seems once again arbitrary. The motivation to select *on* instead of *in* lies not only in the fact that the trajector − in this case the captain and his boat − is not part of the sea, but also in his position of control. The captain of the boat is conceptualized as the user of the sea surface for support in order to carry out transport or motion. Furthermore, the topological mode (contact) and the dynamic axis are compatible with the use of *on*. What is most relevant here, however, is the fact that the contrast with example 27 is based mainly on the functional mode instead of the dynamic or topological ones. The same situation could be conceived with a different functional construal if the speaker used the preposition *in*, as in "the boat in the sea". In that case, the boat would be seen as lost or contained in the sea, and the sea would be seen as the entity that contains it, secludes it from civilization and keeps it in isolation.

Work at, work on, work in/ at job, on job, in job

(30) They are willing to settle, however, in *anything* that offers pheasants to shoot at and peasants to work at. (A17: 75)
(31) *My* dress needs some work on it. (N01: 151)
(32) Like many others, he had to work *hard*, *long* hours in a struggling *family* business (E23:8)
(33) But he decided he wouldn't mind company in return for free drinks, even though he made good money at his job.
(34) ... wherever *you can use* two teams on a job, five men, not four, is the magic number. (E35: 67)
(35) In both cases the *student* attends school half time and works *in* a regular job the other half. (F33: 9)

Functional modes play a central role in the contrasts between the examples in the last series. We analyse the combinations of the verb *work* followed by a prepositional phrase together with the noun *job* as a landmark, because their semantic import is quite similar. In both cases, the construal implies a human trajector who works or carries out a job. Curiously enough, the same real situation may be expressed linguistically with *at*, *on* or *in* depending on the functional mode conceived by the speaker. In examples 30 and 33, the speaker has selected the operation mode that characterizes the preposition *at*. In both examples, the situation is conceptualized as a human trajector who addresses an activity (30) or other people (33) with the purpose of use or manipulation. In examples 31 and 34, the control pattern is activated, the trajector being the entity that exerts control. Thus, in 31 the dress is under the control of the subject in the sentence, and in 34 the teams exert control over the job. In examples 32 and 35, the control pattern is reversed and the

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landmark is the entity that exerts some kind of control over the trajector. Thus, in 32 the "family business" exerts some control or pressure over the worker (the use of *in* instead of *on* indicates this nuance of meaning); the context "…hard, long hours…" favours this semantic interpretation. Finally, example 35 activates the same functional construal, where a *student* trajector works "in a regular job", which implies that the student is under the control of the employer or the job as a global entity.

Even though the context sometimes does not produce enough semantic prosody for these construal interpretations, the functional modes described in section 2 provide a semantic tool for the explanation of such contrasts as the ones illustrated in this section. In any case, our interpretations are plausible and offer semantic motivation for the selection of one preposition over another in a given context.

4. CONCLUSION

Here, we have introduced a debate on the functional patterns expressed by the English prepositions *at*, *on*, and *in*, with emphasis on the semantic contrast between them. The contrasts are looked for in those contexts where two or the three of them appear in colloquial expressions or collocations. We claim that each of these prepositions expresses a particular functional relation between trajector and landmark, and this relation becomes relevant for meaning distinctions in those contexts where physical topology or dynamic patterns are not focussed on or are less relevant. A functional relation of intentionality and operation is posited for *at*, so that the trajector is in a position of operating in relation to the landmark (encounter). As for *on*, the trajector is in a position of exerting control over the landmark, or just using the landmark to maintain control over the situation (support). Finally, *in* indicates that the trajector is controlled by the landmark. This may be construed in two ways; either the landmark protects the trajector from external agents or it prevents it from free movement (enclosure).

In short, we suggest that the polysemy of prepositions incorporates these functional modes. The origin of this type of meaning extension, nevertheless, remains a matter of controversy. Do functional patterns originate in topological relations and/or dynamic patterns, or have they emerged independently from experiential embodiment? Controversial evidence comes from different perspectives. The traditional view holds that topological modes are at the base of further semantic extensions, via metaphorical mappings, in accordance with diachronic studies. Conversely, from the point of view of ontogenetic development and psycholinguistic experimentation, evidence has shown that different modes are acquired simultaneously (Bowerman, 1996; Tomasello, 1987) and processed independently (Coventry *et al.* 2004; Kemmerer, 2005).

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