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# REFLECTIONS ON THE FUNCTIONAL CHARACTERIZATION OF SPATIAL PREPOSITIONS

**Abstract.** In his research on spatial prepositions, Vandeloise raised the basic question of whether they are really spatial in nature. He clearly established the importance – if not the predominance – of functional considerations. In the case of *in*, for example, the container function is at least as important as spatial inclusion; likewise, the support function is central to the meaning of *on*. Accepting the validity of this insight leaves certain issues unresolved, such as the relative weight of spatial and functional factors and how they relate to one another. And more specifically, if the functions in question are really fundamental, why is the containing or supporting element expressed grammatically as the preposition's object (in contrast to verbs like *contain* and *support*, which choose it as their subject)? These matters are addressed in the context of a broader examination of grammar viewed as a product and instrument of embodied cognition and thus reflective of how we apprehend and interact with the world.

## 1. The basic question

As a unifying theme of his research, Claude Vandeloise probed deeply into the rudiments of human cognition as evidenced by the semantic analysis of linguistic elements. His multifaceted investigations centered on elements naïvely and traditionally regarded as "spatial" in nature, starting from his classic work on French prepositions (Vandeloise 1984, 1986, 1991). More than anyone else, he was responsible for exposing the conceptual complexity of such elements, showing conclusively that they cannot be characterized solely in terms of spatial configuration. Indeed, he raised the basic question of whether they are properly regarded as spatial at all,

or whether a **functional** characterization might be more fundamental and descriptively more adequate (Vandeloise 1985). The essential validity of this insight is now generally accepted in cognitive linguistics. The need is thus recognized for an integrated account along the lines proposed by Vandeloise himself (2006), in which both spatial and functional factors are accommodated and related to one another. Here my examination of these matters will be framed by a broader consideration of how grammar relates to embodied cognition.

Along with Herskovits (1986, 1988), Vandeloise established the basic point that a preposition cannot be consistently characterized in terms of a single spatial configuration, even allowing for geometric idealization. The meaning of *in* is not just a matter of spatial inclusion, as shown by *the flower in that vase*, where most of the flower protrudes. Nor even partial inclusion, as witnessed by the now well-known example of a pear, resting on a pile of apples, that is *in* a bowl despite being totally outside the bowl's spatial confines. Likewise, *on* cannot be consistently described as indicating contact with an upper surface (note *the painting on the wall*), contact with a surface (*a fish on a hook*), or even contact (*the book on the table* may be resting on a stack of magazines).

These and many other problematic cases are neatly handled by a characterization in terms of function: for *in*, the **container** function (a container holds its contents); and for *on*, the **support** function (a bearer supports its burden). Yet function alone is insufficient. The intuition that prepositions specify "locative" relationships cannot just be dismissed. There are uses where spatial location is the primary if not the exclusive motivating factor. In examples like *the smile on his face* and *the shadow on the wall*, the notion of support is either very tenuous or absent altogether. Spatial configuration alone is enough to motivate expressions like *the dot in the circle*. As noted by Vandeloise (1991: 219-220), full spatial inclusion contributes to the felicity of *the brain in his head*, for in general *in* is not used for constitutive parts (cf. **the nose in his face*). Moreover, an account based solely on the support and container functions fails to explain why the supporting or containing entity is coded by the prepositional landmark (or object), in contrast to verbs like *support*, *contain*, or *hold*, which code it as the trajector (or subject).

Hence the meaning of a preposition cannot be captured by a single semantic specification pertaining to either function or configuration. Instead, according to the view now prevailing in cognitive linguistics, prepositional meanings are complex in two respects. First, an element exhibits a range of conventional senses or established uses, usually

anchored by a central case with respect to which the others can be seen as motivated extensions. The central case goes by various names, such as **prototype** (Lakoff 1987), **spatial scene** (Tyler and Evans 2003), **conceptual schema** (Navarro i Ferrando 1998), and for Vandeloise, **(logical) impetus** (*impulsion*). While these notions are not necessarily equivalent, the differences can largely be ignored for present purposes. Second, a given value – especially the central one – is complex in that its characterization involves multiple, coexisting factors. For instance, Deane (1993, 2005) posits a "multimodal" description comprising visual, motor, and force-dynamic images. Navarro i Ferrando proposes a similar scheme whose factors include the topology of objects, the motion and force involved in interacting with them, and their function.

The term **function** works well for *in* and *on*. The function of a container is to hold its contents, and a pedestal has the function of supporting a statue. Vandeloise points out, however, that in its usual sense the term is a bit too narrow: "La nature de ces primitifs diffère et le terme *fonctionnel* ne s'applique exactement qu'à certains d'entre eux comme les relations porteur/porté et contenant/contenu. D'autres sont plutôt de caractère anthropomorphique, liés à la forme du corps humain ou à son système perceptif" (1985: 119). Among the additional factors he cites are physical and perceptual access (*sous*, *derrière*), order of potential encounter (*avant*), and direction based on general and lateral orientation (*devant*, *à gauche*). His term **anthropomorphic** would seem to capture the essential unity of these various notions, which pertain to human interaction with the world at the physical, perceptual, and purposive levels. It is roughly comparable to what cognitive linguists refer to as **embodiment** (Johnson 1987; Lakoff 1987; Ziemke, Zlatev, and Frank 2007; Frank, Dirven, Ziemke, and Bernárdez 2008).

As an overall characterization, Vandeloise (2006) arrived at the following formulation. The central value of a spatial element (its impetus) consists in a **complex primitive**. This is a primitive in the sense of being pre-linguistic, and complex in the sense that numerous propositions are needed to describe it exhaustively. Despite their complexity, these primitives are readily grasped as wholes due to their anthropomorphic nature; they are "unified by their function in our survival in the world" (150). Thus in a complex primitive the multiple factors relevant for describing an element are all present simultaneously. For example, the primitive for *in front of* – "general orientation" – is defined by the coincidence of line of sight, direction of motion, and frontal orientation defined anatomically. The primitive for *in* combines configurational

properties (concavity, spatial inclusion) with the interactive properties they afford (storage, protection, multidirectional control).

## 2. Grammar and human experience

This characterization by Vandeloise meshes well with some basic ideas of Cognitive Grammar (Langacker 1987a, 1991a, 2008a). Among these, naturally, are general notions of cognitive linguistics like embodiment (the anthropomorphic principle) and polysemy (whereby a lexical meaning consists in a range of values centered on a prototype). A more specific point is the importance ascribed in Cognitive Grammar (henceforth CG) to **conceptual archetypes**, which seem quite comparable to complex primitives. Conceptual archetypes are experientially grounded concepts so frequent and fundamental in our everyday life that we tend to invoke them as anchors in constructing our mental world with all its richness and levels of abstraction. Since they pertain to many different aspects of experience, and archetypal status is a matter of degree, there is no fixed inventory. For sake of concreteness, I will cite just a few examples: a physical object, an object moving through space, a person, the human face, a whole and its parts, maintaining a posture, walking, seeing something, saying something, holding something, handing something to someone. Also qualifying as archetypes are the functions of containment and support, as well as the factors involved in general orientation.

As noted by Vandeloise for complex primitives, archetypes are basic conceptual units readily grasped in gestalt-like fashion, even though explicit descriptions are hard to formulate, seem less than revealing, and require numerous statements. For instance, we are clearly disposed to apprehend physical objects, which are fundamental to the construction of our mental world, but it is not at all easy to devise a satisfactory definition of the notion. Likewise, walking is very basic to our experience, and seems quite simple once we learn to do it, but actually describing the activity (e.g. in enough detail to model it) is very difficult. Conceptual archetypes represent salient, essentially universal aspects of everyday experience, as determined by the interplay of biological and environmental factors. Their emergence is a natural consequence of how we interact with the physical and social world, having evolved to cope with it successfully.

It should come as no surprise that conceptual archetypes play a significant role in language. More specific archetypes are strong candidates

for lexical expression. We would expect most any language encountered to have lexemes roughly comparable, say, to *person*, *face*, *sit*, *go*, *see*, *hold*, *give*, *in*, and *on*. Such expressions tend to be extended metaphorically to abstract uses (e.g. 'face' > 'in front of', 'see' > 'understand', 'hold' > 'have') and commonly serve as lexical sources for grammaticization (e.g. 'sit' > stative, 'go' > future, 'give' > benefactive). At a more schematic level, certain archetypes have evident grammatical significance even in the absence of lexical expression. Examples of this sort are basic semantic roles like agent, patient, instrument, and experiencer. Moreover, archetypes at this level of abstraction function as the central values of grammatical categories – for instance, agent as the prototype for subjects, and physical object for nouns.

This leads to a basic claim of CG that is controversial but nonetheless both natural and a source of conceptual unification. It pertains to certain grammatical notions reasonably considered both fundamental and universal; while there is no definite inventory (this being a matter of degree), a minimal list includes noun, verb, subject, object, and possessive. Such notions, it is claimed, are susceptible to semantic characterization at two different levels: the prototype level (for central instances) and the schema level (for all instances). In each case the prototype is an experientially grounded conceptual archetype. By contrast, the schemas have no specific conceptual content, residing instead in basic cognitive abilities (or mental operations). These abilities are **immanent** in the corresponding archetypes, i.e. they "lie within them", being inherent in their conception. In developmental terms, the abilities are initially manifested in the archetypes – they provide the basis for structured experience and are thus responsible for the archetypes emerging in the first place. Subsequently, the same operations are applied to other sorts of conceptions, in which they are not inherent, thus extending the category they define to non-central instances.

Physical object is the archetype serving as the prototype for nouns. Their schematic characterization consists in cognitive abilities inherent in the very conception of an object: conceptual **grouping** and **reification**, by which a group is apprehended as a unitary entity for higher-level purposes (Langacker 1991b, 2008a: ch. 4). For physical objects themselves, these operations proceed automatically below the level of conscious awareness. They become more evident when extended to other circumstances, giving rise to non-prototypical nouns such as those designating groups (e.g. *herd*), abstract things (*month*), or reified events (*birth*). The prototype for verbs is an agent-patient interaction. The schema – ascribed to verbs in general – consists in apprehending a relationship and tracking its development

through time. The two participant roles in the verb archetype, agent and patient, function respectively as the prototypes for subject and object. As their schematic import, subject and object are characterized as **primary** and **secondary focal elements** in a relationship, reflecting our mental ability to direct and focus attention within a scene (Langacker 1999a). A number of archetypes are prototypical for possessives, including ownership, kinship, and whole-part relations (Langacker 1995a, 2004a; Taylor 1996). Proposed as the schema for possessives is our capacity for invoking one conceived entity as a **reference point** in order to mentally access another (Langacker 1993a).

These notions are central to a unified account of the development and relationship of conceptual and linguistic structure. At all stages and levels of organization, structure is seen as **dynamic**, residing in patterns of processing activity. The account begins with conceptions that emerge through embodied experience as we interact with our surroundings in the manner afforded by basic cognitive abilities. From this basis, some very general processes – occurring repeatedly, over a long period of time, at many successive levels – make possible the construction of our mental world in all its richness and complexity. Through recurrence, common experiences are progressively **entrenched**, coalescing into established cognitive routines readily activated and executed as prepackaged wholes. Of course, since every experience is unique at the level of fine-grained detail, any commonality that is reinforced and established as a routine is bound to be coarse-grained relative to the specific conceptions giving rise to it. The **abstraction** (or **schematization**) which thus occurs can in principle be carried to any degree. Another general process is **simulation** (or **disengagement**), whereby abstracted routines are executed independently of the circumstances in which they originated.

Conceptions emerge at different levels of specificity. For example, we can apprehend a particular cup with distinguishing features; being directly tied to immediate experience, conceptions of this sort are readily accessible to conscious awareness. Also quite accessible, representing the usual level of lexical expression, is the abstracted conception of a *cup* as a prototype or a more inclusive type. More schematic notions like container and physical object, which neutralize many types of this sort, are less likely to be coded by basic vocabulary. As specific and more general archetypes, they nonetheless have conceptual and linguistic significance, e.g. physical object as the prototype for nouns. This more general archetype, while abstracting away from all specific detail, can still be characterized as the manifestation of basic cognitive abilities (grouping and reification) in their

primary domain of application (the physical realm of space and material substance). A further degree of abstraction consists in the disengagement of these abilities, i.e. their application outside the physical realm. Being devoid of specific content, these abilities are not per se subject to conscious awareness. They do however constitute the schematic import of nouns, inhering in the archetype that serves as the category prototype, and providing the basis for its extension to non-prototypical members.

Mental simulation, involving conceptions at various levels of abstraction, has a number of basic functions in cognition. We recall events we experience by partially simulating that experience. In the guise of perceptual, motor, and kinesthetic imagery, simulation is an important aspect of lexical meaning. Part of the meaning of *cup*, for example, are schematized images representing what one looks like and what it feels like to use one. At higher levels of abstraction, the disengaged application of mental operations figures in **imaginative** phenomena like metaphor, blending, and fictivity (Lakoff and Johnson 1980; Fauconnier and Turner 2002; Langacker 1999b). In metaphor, conceptions abstracted from a **source domain** are applied in the apprehension of a **target domain**; e.g. a set and its members are apprehended in terms of a container and its contents (Lakoff 1987). The container and content invoked are not of any specific sort, but are rather general archetypes. According to the **invariance hypothesis** (Lakoff 1990), what is projected onto the target is the source domain's **image schematic structure**. However, it is not made very explicit what level of abstraction this represents (cf. Hampe 2005). One interpretation – consistent with Johnson (1987), who emphasizes the dynamic nature of image schemas – is that the mental operations inherent in conceiving and reasoning about the source are manifested in the target (Langacker 2006; cf. Grady 2005, 2008).

Slightly different from metaphor is the phenomenon known as **fictive motion** (Langacker 1986, 2005; Matsumoto 1996; Talmy 1996; Matlock 2001, 2004), as in the following: *A thin crack runs from the corner of the window to the ceiling*. In their primary sense, expressions like *run* and *from X to Y* pertain to motion along a spatial path. Here, though, they describe a static situation. What happens is that mental operations inherent in the conception of spatial motion are disengaged from such motion and applied for a different purpose. Specifically, the conceptualizer traces a mental path through space not by way of tracking an object's movement, but rather as a dynamic means of apprehending its configuration. The path registered by this scanning operation is not traversed by a moving object,

but solely by the conceptualizer, who traces along the object in building up to a full conception of its spatial extension.

In the final analysis, all conceptions are dynamic, residing in processing activity that unfolds through time. But as they become more schematic, abstracting away from any specific content, their dynamic nature becomes more evident and it seems more reasonable to regard them as mental operations or cognitive abilities. This is so for a number of fundamental notions that are independent of any particular domain, such as path, group, continuity, and change. It makes no real difference whether we view these as elemental concepts or as basic mental capacities: scanning, grouping, registration of sameness, detection of a difference. In various combinations, moreover, such notions form general cognitive models which, despite their schematicity, are significant by virtue of being ubiquitous and manifested in many realms of experience. One such model is the abstract conception of a bounded event, where scanning through time registers continuity interrupted by an episode of change. At a higher level of organization, the recurrence of events figures in the notion of a cycle (Grady 2005). I have argued that a very general cyclic conception (the "control cycle") is inherent in many aspects of human experience and is relevant to the characterization of numerous linguistic phenomena (Langacker 2004b, 2008b, 2008c). For instance, successive phases of this cycle are reflected in sets of verbs like *want* > *get* > *have* or *suspect* > *learn* > *know*.

An overall picture thus emerges in which conceptions at different levels of abstraction tend to have certain roles in language structure. While they are not necessarily discrete or well-delimited, three levels are especially relevant for present purposes. At the first level are fairly specific concepts of the sort coded by lexical items that are simple, frequent, and acquired early, such as *cup*. These roughly correspond to concepts representing **basic level categories** (Rosch 1978). Though schematic relative to the conception of particular instances or subtypes, the notion *cup* still incorporates a recognizable shape specification (visual image) and mode of interaction (motor image). Depending on their cognitive and cultural salience, notions of this sort might be considered archetypal. At the second level are more schematic conceptions whose archetypal status is perhaps more evident, e.g. the generalized notion of a container, or more abstractly, of a physical object. Such archetypes are more directly relevant for grammar owing to their greater generality: while still pertaining to physical entities, they abstract away from any particular shape or motor routine. Instead, their configurational and interactive properties are constituted by elemental, domain-independent concepts (or mental

operations) like grouping, bounding, inclusion, access, and control. These represent a third level of abstraction. And being independent of any specific content, they are not limited to the physical realm – resulting, for instance, in certain container-like properties being ascribed to abstract entities such as sets or mental states (e.g. *in love*).

These levels figure in the CG claim that certain fundamental grammatical notions can be characterized semantically in terms of both a prototype and a schema: serving as the former are general archetypes (e.g. physical object, in the case of nouns), and as the latter, basic cognitive abilities inherent in their conception (grouping and reification). The levels also have diachronic import. Lexical items representing archetypes most commonly function as source expressions for grammaticization. And to the extent that this process entails the loss of specific conceptual content, mental operations immanent in the archetypes are left to operate independently, thereby emerging as the essential semantic import of grammaticized elements. For example, when a verb like *sit*, *stand*, or *lie* grammaticizes into a general marker of stativity, specifications of shape and posture gradually fade away. Its remaining conceptual import consists in mental operations: the registration of sameness while scanning through time. Likewise, general possessive predicates evolve from verbs of physical control, such as *hold*, *grab*, or *carry* (Heine 1997). This comes about as they are extended to non-physical domains and the notion of control is progressively attenuated (Langacker 1999c). At the extreme, all that remains is the reference point ability: that of invoking one conceived entity as a basis for accessing or interpreting another (Langacker 1993a, 1995a, 1999c, 2004a). This represents the schematic characterization of possessives, immanent in the prototypes of ownership, kinship, and whole-part relations.

## 3. Clausal organization

The overall scheme just outlined concerns the conceptual basis of lexicon and grammar, which are seen in CG as forming a continuum. In accordance with this view, prepositions appear to be intermediate – they are sometimes regarded as lexical, sometimes as grammatical, and sometimes both. They prove to be intermediate in other ways as well. To see this, we must first examine the conceptual basis for certain aspects of clause structure.

A key to understanding grammar lies in the recognition that particular conceptual archetypes – especially salient due to their prevalence in moment-to-moment experience – provide the prototypical values of basic categories and canonical constructions. These are, of course, extended beyond their central values to accommodate the immensely varied array of conceptions requiring linguistic expression. Their extension relies on mental operations inherent in the archetype, and for categories with a wide enough range of members, a schematic characterization consists in just these operations (rather than any specific content). Nonetheless, it is in the experientially grounded archetypes that we find the rationale for canonical aspects of grammatical organization.

A constant feature of our experience is that we, as well as the entities we directly interact with, are small and compact relative to the far greater extensionality of our spatial surroundings. This is reflected in the archetypal distinction **participant** vs. **setting**, which has numerous grammatical ramifications even when covert (Langacker 1987b, 1990: 230-234). Although these notions are flexibly construed, typical sorts of participants include people, animals, and physical objects, while some typical settings are rooms, buildings, cities, and nations. A **location** is any portion of a setting delimited for some purpose (e.g. as the place where a certain participant can be found). An important dimension of this archetypal conception is that participants are conceived as **interacting** with one another, but merely **occupy** settings and locations. For instance, I can interact in many ways with an object, say a pencil: by picking it up, writing with it, breaking it, putting it somewhere, etc. These are all force-dynamic interactions that affect the object in some manner. But under normal circumstances there is little I can do by way of forcefully interacting with my global surroundings – I merely inhabit the North American continent, having relatively little impact on it.

Viewed through the eyes of modern science, the physical entities that populate our world range from the unimaginably small (atoms, subatomic particles) to the unimaginably large (the universe or multiverse). What counts for language, however, are conceptual archetypes deriving from normal human experience. On a human scale, and from the human perspective, physical entities are more naturally viewed in terms of a spectrum ranging from canonical participants to the most global spatial settings. The most canonical of participants is a person. Based on a number of salient properties – size being only one – we can observe a maximal opposition between the entities at the endpoints of the spectrum. In contrast to an all-encompassing setting, a person is small,

clearly bounded, mobile, energetic, alive, and sentient. Extending from either extreme is a range of entities whose status as participant or setting is equally canonical: non-human participants like animals and easily manipulated objects; and bounded settings, like a continent, a valley, or a field. Of course, many sorts of entities are intermediate, seeming more participant-like or more setting-like depending on the circumstances. A chair and a bench both qualify as participants, being objects that we interact with in various ways, but the latter, due to its greater size and lesser movability, is more readily conceived as a location (a place that people merely occupy).

The two ends of the spectrum represent fundamental and complementary aspects (or "realms") of human experience. The **active** realm is that of action, change, and force, where mobile creatures – the paragon being a volitional human agent – act on the world. By contrast, the **circumstantial** realm is that of settings, locations, and static situations, where objects with stable properties are arranged in particular ways. These two aspects of our experience are of course not separate but interdependent: on the one hand, circumstances define the potential for activity and provide the stage on which it unfolds; on the other hand, activity alters the circumstances and thus the potential for subsequent activity. But despite their complementarity and indissociability, the realms are quite unequal from the human standpoint. The special status of people, as both the paragon for actors and the center of their own mental universe, imposes an asymmetry wherein the active realm is central, the circumstantial realm peripheral. Hence the spectrum leading from canonical participant to canonical setting is not apprehended in neutral fashion, but egocentrically, from our position at one extremity. From this perspective it amounts to an abstract scale of "distance", based on such factors as likeness to people, the potential for interaction, and the possibility of empathy.

We have so far considered these archetypal conceptions in their own terms, independently of language. They do however have many linguistic manifestations. For example, the scale of distance (sometimes called the "empathy hierarchy") plays a role in English possessives. As noted by Deane (1987), possessors representing successive positions along this scale (e.g. person > animal > object > setting) are increasingly less likely to be expressed by a pre-nominal genitive, and more likely to be expressed by a post-nominal *of*-phrase: *the baby's head* vs. *??the head of the baby*; *the cat's tail* vs. *?the tail of the cat*; *?the table's leg* vs. *the leg of the table*; *??the valley's floor* vs. *the floor of the valley*. Also, and more relevant

for present purposes, the archetypes discussed have a significant role in clausal organization.

The labels for the two realms allude to the distinction drawn by Tesnière (1965) between **actant** and **circonstant**, reflecting a basic asymmetry among the nominal elements in a clause. It is seen most clearly in the differences between subject and object nominals, on the one hand, and those with adverbial function, on the other. In grammatical terms, the former are usually obligatory in a clause, the latter optional. Also, the former are normally expressed by bare nominals or marked by "grammatical" cases, whereas the latter are introduced periphrastically (by adpositions) or marked by cases with more evident semantic content. Conceptually, of course, subjects and objects are generally participants, while the specification of settings and locations is typical for adverbials.

Thus the maximal conceptual opposition between archetypes at the two ends of the spectrum – a volitional human agent and an all-compassing setting – is mirrored by the very different grammatical properties of subjects and adverbial expressions. Now it is typical for a maximal opposition to be exhibited by elements with the greatest salience. For example, the distinction between two categories is generally most evident in their prototypes (peripheral members may be quite similar). And if we consider the range of grammatical categories, the two most prominent – nouns and verbs – are polar opposites with respect to both their prototypes and their schematic characterizations (Langacker 1991a, 2008a). Due to their maximal opposition, it might therefore be expected that the archetypes human agent and global setting would canonically be associated with the two most salient elements in a clause. This is not the case, however. In the CG analysis, the two most salient elements of a clause are the subject and object, characterized as the primary and secondary focal elements in the relationship it designates. But while the subject is canonically an agent, the global setting is certainly not a typical object.

Why not? The evident reason is that the archetypes are arranged not only in terms of a maximal opposition, but also a center and a periphery. From the perspective of human agents, the active realm is central, the circumstantial realm peripheral. It stands to reason, then, that clauses should be primarily concerned with actions and events, and only secondarily with static circumstances. So for purposes of clause structure, what counts as a maximal opposition is the one observed within the active realm, between the participants in an interaction. The role archetypes exhibiting this maximal contrast are agent and patient. In a canonical agent-patient interaction (e.g. *She sliced the cake*), the

agent is a person who acts intentionally, functions as the energy source, and is unchanged by the event. The patient is the polar opposite in each respect: it is inanimate (hence non-volitional), absorbs the energy, and is changed as a consequence. It is thus to be expected that subject and object, characterized schematically in terms of primary and secondary focal prominence, would have agent and patient as their prototypes.

To be sure, not every sentence has an agent for its subject and a patient for its object. The most one can say is that this arrangement has some claim to being both optimal and canonical: optimal in that the two most prominent grammatical roles are co-aligned with the two most salient participant archetypes; and canonical by virtue of representing the default coding for a type of occurrence both ubiquitous and of prime importance from our egocentric perspective. But obviously, there are many departures from this canon, as many other factors play a role in shaping language structure. Even a canonical agent-patient interaction may, for discourse reasons, be coded with non-default alignment (with a passive, for example). The most general, factor, however, is simply the vast and varied range of occurrences that need to be described. As the basic pattern of a two-participant clause is extended to more and more kinds of interactions, subject and object are extended beyond the agent and patient prototypes to other participant roles. In *She recognized it*, the subject is an experiencer rather than an agent, and the object is a non-patient, being quite unaffected by the interaction.

An additional factor is that agentive interactions are not the only sort of occurrence sufficiently prevalent and important to motivate a basic clause type. For one thing, we engage the world not just physically but also mentally, interacting with other entities through perception and thought. It is quite common (as just illustrated) for such occurrences to be expressed in the same manner as physical interactions. But many languages accommodate this archetype by means of a distinct clausal pattern, generally involving a dative-marked element which is either the subject or has certain subject-like properties. Furthermore, not every occurrence is interactive. Few aspects of our experience are more frequent and fundamental than the activity of moving around in space. While this usually has an interactive purpose, it does not per se constitute an interaction (since we merely **occupy** locations). For describing spatial motion, probably every language has a basic type of clause consisting of a subject, a motion verb, and a locational complement serving to specify the path or goal (e.g. *She walked into the room*). And finally, since our concerns extend beyond the active realm, we need ways of describing stable

circumstances. This is often accomplished through clauses consisting of a subject, a *be*-type verb, and a complement specifying a property or static location (e.g. *She is {clever / in her study}*).

It is crucial to bear in mind that conceptual archetypes are not intrinsic to the world but are rather a matter of how we apprehend it. A limited inventory cannot do justice to the complexity and variability of our experience, which is hardly susceptible to rigid categorization. A given entity can thus be viewed and categorized in alternate ways depending on the situation and how we choose to construe it for linguistic purposes. A room is usually just a setting, but we can also engage it in an interaction (e.g. by cleaning, painting, or merely examining it), in which case it counts as a participant. A cat is agentive in regard to catching mice, but may only be a location if we are talking about the travels of a flea. Through their flexible application, archetypes grounded in basic experience provide a basis for apprehending and describing any aspect of our real or mentally constructed world.

## 4. The place of prepositions

It is usual for languages to have a basic clause type canonically used for describing stable situations in the circumstantial realm. In one common pattern, this type of clause employs a *be*-type predicate whose complement specifies a property of the subject (*It is heavy*) or its spatial location (*It is on the counter*). The latter represents one primary use of prepositions and comparable elements. Yet even these core circumstantial expressions have close connections with the active realm. The properties ascribed to objects generally have some kind of interactive basis (Langacker 1995b); something *heavy* is hard to lift. In describing something as being *on the counter*, we would normally also entertain some conception of movement or activity involving it: how it got there, or how to reach it in order to use it.

The point is a general one: even if we focus on the purely spatial import of prepositions, the active realm is important for understanding their semantics and grammar. Spatial relationships are prime components of the circumstantial realm (that of settings, locations, and stable arrangements), but we are most concerned with this realm as a stage for human action. This is reflected in the sorts of entities most commonly chosen as the primary and secondary focal elements in the relationship designated by a preposition. In CG, these elements are referred to as the

**trajector** and the **landmark**. Now one might expect that, for describing stable spatial arrangements, setting-like entities would tend to function in both capacities. But while this is certainly possible, e.g. *Canada is in North America*, it is hardly canonical (except in geography lessons). More typical are expressions like *Jill is in the garage*, in which the trajector is a participant and the landmark is a local setting (or location) rather than a global one. With respect to the distance scale, ranging from a human agent at one extreme to an all-encompassing setting at the other, the trajector tends to lie toward the former pole, and the landmark toward the middle—not the opposite extreme. The center of gravity is thus in the active realm.

In clauses that specify static location, the trajector is canonically either a person or a movable physical object: *She's on the porch*; *It's in that drawer*. In each case the participant role it instantiates is a mere shadow of the role it has in the agent-patient archetype central to the active realm. I suggest, however, that this archetype does indeed cast its shadow—although the trajector's role approximates zero in regard to action, change, and force, these notions are still relevant to its characterization.

The role of a person who merely occupies a location represents the extreme case of **attenuation** (Langacker 1999c) vis-à-vis the archetype of a volitional human agent. Starting from a canonical agent-patient interaction (e.g. *She smashed the vase*), we can note several steps along this path, each resulting in another archetypal conception associated with a basic clause type. There is first a single-participant event coded by a simple intransitive clause (e.g. *She stood up*). While this is an **action** rather than an **interaction**, the subject is still a volitional actor exerting energy. A particular kind of action, one having great importance and cognitive salience, is that of moving around in space. Corresponding to such events are intransitive clauses containing a movement verb and a complement describing the path of motion (e.g. *She walked along the river*). While movement requires the expenditure of energy, its force-dynamic aspect is usually of lesser interest than the trajector's changing location. Motion events are thus ambivalent, lending themselves to construal either as actions or simply as occurrences in which the trajector occupies a series of positions through time. (This distinction may be marked overtly, e.g. by a *have*-type vs. a *be*-type auxiliary in the perfect, as argued for Dutch by Beliën [2008: §5.5].) Static location can then be regarded as the degenerate case of such movement, where the trajector occupies the same position throughout. But even here we have the shadow of interaction. Being in a particular place makes it possible to perform certain actions, which normally provide the reason for moving

there. And a common reason to specify a person's location is that it bears on the possibility of interacting with her.

Likewise, an inanimate object that merely occupies a location represents an extreme case of attenuation vis-à-vis the archetypal role of patient. In a sentence like *She broke it*, the object is affected in the strong sense of undergoing an internal change of state; in *She put it on the desk* it is affected only in the weaker sense of undergoing a change in location; and it is not affected at all in descriptions of static location, e.g. *It is on the desk*. Once again, interaction casts its shadow on such expressions. If an object occupies a particular location, it is usually because someone put it there for a certain purpose. And we commonly specify its location so that someone will be able to use it.

The landmark of a spatial preposition tends to be intermediate on the scale of distance. Though presumably accurate, it is generally not very useful to be informed that *Jill is in the solar system* or that *Your keys are in North America*. Several kinds of entities canonically serve as spatial landmarks. The first consists of entities such as enclosures, bounded areas, and geographical regions of limited extent: *Jill is in {her room / the house / the back yard / Chicago}*. These are naturally viewed as locations, being characterized more by spatial expanse than by material substance. Next are material objects which, due to size and relative immobility, lend themselves to being construed as locations rather than participants: *She is {in the bathtub / at her desk / on that bench}*. But it is not at all unusual for entities normally construed as participants to function as landmark: *It is {in my wallet / under that magazine / beside the vase / behind the paint cans}*.

We can observe in these examples a general trend for a wider range of prepositions to occur with landmarks more readily viewed as participants. The reason, evidently, is that the landmark's function is to specify a location, and landmarks which are not inherently locational fail to do so with any precision. The landmark entity is thus invoked, not as a location in and of itself, but rather as a point of reference for defining one. It is defined by the preposition. As the distinctive aspect of its meaning, each spatial preposition specifies a region in space, characterized in relation to the landmark object, within which the trajector can be found: its interior (*in*), the region adjacent to it (*beside*), its general neighborhood (*near*), etc. In this way a set of prepositions provides a highly flexible means of using an object to locate another entity.

How can multiple spatial regions be characterized in terms of a single reference object? A natural strategy is to base the definitions on

parts of the object, or – by metaphorical projection – on parts of the human body (MacLaury 1989; Langacker 2002). This strategy is evident in complex prepositional locutions: *by the side of the river*; *at the top of the stairs*; *in the back of the room*. It is further evident in complex prepositions at various stages of grammaticization (*in front of*, *in back of*, *on top of*, *ahead of*, *alongside*, *atop*) and in the vestigial analyzability of certain simple prepositions (*beside*, *behind*, *before*). To the extent that prepositional expressions are analyzable, they manifest overtly the conceptual distinction between a reference object and a spatial region defined in relation to it.

Thus three major entities, each with a different function, figure in the conceptual characterization of a spatial preposition. The trajector (translated by Vandeloise as *cible*) functions as the **target** of search, the entity one is trying to locate. The landmark functions as a **reference point** for purposes of finding it. Defined in relation to this reference point – hence mentally accessible through it – is a limited region within which the target can be found. This is called the **search domain** (Hawkins 1984; Langacker 1993b, 2004a). It should be noted that terms like "search", "find", and "reference point" are not just metaphorical. A common reason for using a locative expression, e.g. *The brushes are behind the paint cans*, is precisely so that the interlocutor can find the trajector, employing the landmark as a point of reference in order to do so. The "finding" may be purely mental, with no intent of actually reaching the target and interacting with it, but in either case the conceptualizer traces the same mental path (from reference point to search domain to target) by way of apprehending the locative relationship. The mental operation of scanning along this path is immanent in the conception of someone actually following it to the target, and possibly also in the conception of the target moving to its current position.

This conceptual characterization of prepositions is indicative of their intermediate status, which has several dimensions. First, as noted earlier, they are intermediate in regard to the lexicon-grammar continuum. Second, they are intermediate in terms of grammatical category, where noun and verb represent a maximal opposition. Finally, prepositions have intermediate status with respect to the distance scale and the active vs. circumstantial realms.

Talmy (1983, 1988) groups prepositions with grammatical elements on the basis of their being limited in number ("closed-class" forms) as well as the nature of their meanings ("topological"). I think he would agree, however, that we are not faced here with a sharp dichotomy,

and that prepositions are not the best examples of closed-class elements. If one considers not just the core set of fully grammaticized prepositions (*in*, *on*, *under*, *beside*, etc.), but the entire range of conventional prepositional locutions (inlcuding *by the side of*, *at the top of*, *in the bottom of*, etc.), it is not at all clear that the class is really closed. The continuous process of new prepositions arising through grammaticization is itself an indication that the distinction is a matter of degree. And while they may not have the rich content of typical lexical items, prepositions have definite conceptual meanings that are sometimes fairly elaborate. Indeed, spatial prepositions are themselves subject to grammaticization involving semantic attenuation, giving rise to uses that are indisputably "grammatical" (Genetti 1986).

With respect to grammatical category, prepositions are intermediate between the two most fundamental classes, noun and verb, whose conceptual characterizations are polar opposites. Characterized schematically, a noun designates a thing (i.e. a grouping apprehended holistically as a unitary entity), whereas a verb designates a process (a relationship scanned sequentially in its evolution through time). Prepositions lie in between: they resemble verbs because they designate relationships; they resemble nouns because this relationship is apprehended holistically rather than sequentially (Langacker 2008d). As with adjectives (with which they form a larger class), their holistic nature allows their use as noun modifiers: *that pretty vase*; *the vase on my desk*. At the same time, their relational nature allows their use as clausal heads; to function in this capacity, they combine with *be* – which designates a schematic process – to form a complex verb that follows their evolution through time: *That vase is pretty*; *The vase is on my desk*.

Though it may be extended in various ways, in its basic sense a *be*-type verb designates a stable relationship. It is thus a hallmark of the circumstantial realm. I have noted that the best examples of relationships in this realm – "best" by virtue of being the most stable, being maximally distinct from actions, and involving setting-like elements – can hardly be regarded as typical. While expressions like *Belgium is in Europe* certainly have their place, we more commonly say things like *The cat is under your bed*. In uses reasonably considered canonical, a preposition designates the relationship between a participant and a location toward the middle of the distance scale. Often, in fact, the location is defined in reference to another participant, e.g. *The remote is under that pillow*. In this respect spatial prepositions straddle the active and circumstantial realms. They are also intermediate in that canonical spatial relationships are stable yet contingent: though static at least momentarily, hence part of the current

layout, they are generally construed in relation to movement or interaction. The relationship designated by *The cat is under your bed* is stable only in local terms; it would normally be conceived as resulting from the cat having moved there, probably for some purpose (e.g. to escape the rowdy children), or as raising the question of how to get it out. Likewise, *The remote is under that pillow* implies that someone put it and left it there, and specifies where to find it in order to use it.

So even when left implicit, movement and interaction cast their shadow on the circumstantial realm. The evocation of these active-realm phenomena animates the description of spatial location, with the consequence that even the most stable relationships are conceived as having a dynamic character rather than being purely static. This bears on two issues raised at the outset: the **basic question** and the **alignment question**.

The basic question is whether spatial prepositions should in fact be regarded as spatial in nature, or whether a functional characterization might be more fundamental and descriptively adequate. I suggest, however, that a definite choice between these options may not be essential for analyzing prepositions. More important is to recognize that spatial and interactive considerations are closely bound up with one another, even to the point of being indissociable. An entity's location makes possible a certain range of interactions involving it (e.g. contact with an upper surface allows support). Conversely, interactions provide a basis for characterizing spatial relationships (e.g. order of encounter for *avant*). It is thus to be expected that interactive and configurational properties might be bundled in a single morphological package. They constitute related aspects of prepositional meaning whose importance varies depending on the preposition and how it is used. Still, it does not necessarily follow that their spatial and functional aspects are exactly equal in status. There are grounds for suspecting that the former may have some degree of primacy.

The alignment question pertains to the entities focused as trajector and landmark. It involves a seeming disparity, at two different levels, between the alignment actually observed and the one that might be anticipated on other grounds. Let's take a canonical example: *The kitten is in the box*. One disparity concerns the specific function associated with the preposition. For *in*, this function is containment, with the container serving as landmark (secondary focal element), and the content as trajector (primary focal element). The kitten and the box are thus its trajector and its landmark, respectively. Observe, however, that verbs describing the containment function – verbs like *hold*, *contain*, *enclose*, *protect*, *control*

– exhibit the reverse alignment: if the kitten is *in* the box, then the box *contains* the kitten. If function were predominant, the trajector/landmark alignment of prepositions would at best be unanticipated.

A comparable disparity can be noted even considering prepositions in purely spatial terms. As the schematic description of spatial prepositions, I have offered a conceptual characterization based on reference point relationships (which also provide the schematic import of possessives – hence the close connection between possessive and locative constructions [Langacker 2002, 2004a]). Abstracting away from all specific content, the schema consists in cognitive operations immanent in the conception of any particular spatial relationship: the conceptualizer traces a mental path that leads from a reference point, to a search domain defined in terms of it, to a target found in that location. Since these same operations are inherent in the conception of someone searching for the target and finding it, they amount to a partial simulation of that process. However, while the target is the trajector of a preposition, it represents the landmark (or object) of verbs like *seek* and *find*. If *the kitten is in the box*, one can *find the kitten* by searching there.

What these disparities suggest is that the trajector of a spatial preposition is conceived primarily as a **mover**. I am not claiming that it always actually moves, nor denying the importance (and in some uses the predominance) of interactive functions. I am merely saying that the archetype of moving around in space represents the optimal point of departure for describing the trajector's semantic role – what Vandeloise might refer to as its **logical impetus**. In canonical uses of path prepositions, e.g. *The kitten crawled into the box*, the trajector actually is a mover: *into the box* specifies the path followed by the kitten while crawling. In various ways, moreover, movement has at least a shadow presence in simple descriptions of location, like *The kitten is in the box*. For one thing, stable location represents the limiting (degenerate) case of movement, that where change in position through time falls to zero. More concretely, the trajector's position typically results from prior motion, whether self-induced or effected by another agent (either the kitten crawled into the box or someone put it there). What about expressions like *Cleveland is in Ohio*, where the trajector never moves at all? Though static, the trajector is still the entity whose location is at issue, to be distinguished from other conceivable locations. Apprehending a locative specification must to some extent involve the conception of alternatives, in each of which the trajector occupies a candidate location. However tenuous it may be, this evocation

of the trajector in multiple locations bears a faint resemblance to – in fact, is immanent in – the conception of actual motion.

Despite the importance of interactive functions, the trajector/landmark alignment of spatial prepositions has its impetus in movement (be it actual, prior, potential, virtual, or vestigial). The trajector's role as mover is even reflected in the basic functions: support, containment, seeking and finding. If *X is on Y*, the support afforded by Y keeps X from falling. If *X is in Y*, the containment effected by Y keeps X from moving in any direction. In descriptions of stable location, the trajector's potential for being in different locations creates the need to seek and find it. So while interaction and spatial configuration are closely bound up with one another, and are both essential to the characterization of prepositions, the latter has a certain claim to primacy. The term **spatial preposition**, although it represents a considerable oversimplification, is not a complete misnomer.

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