STRUCTURING SPACE IN LANGUAGE

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All natural languages allow reference to places, expression of spatial relations and localization of entities and processes. The aim of the present article is to overview some possible approaches to structure space or to say it in other words how entities are located in the world.

According to Miller and Johnson-Laird (1976, 394), the conceptual core of space probably originates with the body concept – with what is *at, in,* or *on* our own bodies. The first spatial reference a man learns to use is ego. The primitive meaning of *here*, write Miller and Johnson-Laird, is *where I am*; *from* is probably first understood as *from me*, and so on. Egocentric use of the space concept places the body (the speaker) at the center of the universe. From this point of origin ego can lay out a three-dimensional coordinate system that depends on his own orientation. With respect to this landmark, other entities can be directionally located as above or below (ego), in front or in back (of ego), to the left or to the right (of ego). "Here" is the region of interaction with ego. Both his location (the point of origin) and his orientation (the directions of the coordinate axes) are essential for the interpretation of most words expressing his spatial relations to other objects. In order to understand what a person means when s/he talks about space egocentrically, we have to know where s/he is and in which direction s/he is facing. The linguistic system for talking about space relative to a speaker's egocentric origin and coordinate axes is called the deictic system. According to Klein (1983, 287), deixis is one special device used in integrating expression information (as expressed by words like *here, there* etc. in the case of local deixis) into the whole of contextual information. This can be illustrated with a simple example: suppose someone says in a certain situation *I like it here.* Knowing what the expression *here* means is not sufficient to understand where that person likes it. *Here* means *at a place to the position of the speaker.* Hence, in order to understand what is referred to by the speaker, we must know his position which could be supplied by perception in that situation. But such information is not enough.

Here could mean *in this chair where I am sitting, in this corner of the room, in this street, in this city, on earth.*

According to Lyons (1969), every language-utterance is made in a particular place and at a particular time: it occurs in a certain spatio-temporal situation. It is made by a particular person (the speaker) and is usually addressed to some other person (the hearer); the speaker and the hearer are typically distinct from one another and are in the same spatio-temporal situation. The typical utterance includes reference to some entity (person or non-person, which may or may not be distinct from the speaker and hearer, cf. *Have you finished yet : Has he finished yet?* etc.). The entity to which reference is made in the utterance is referred to as the *Trajector* and the entity serving as the reference point, as the *Landmark. Trajectors* can be physical objects, abstract entities, or situations such as events and states; *Landmarks* are typically physical objects or places in space, or else something metaphorically represented in those terms (Langacker 1987).

The notion of deixis (which is merely the Greek word for *pointing* or *indicating*) is introduced to handle the *orientational* features of language which are relative to the time and place of the utterance. The *personal pronouns* (I, you, we, etc.) constitute only one class of the elements in language whose meaning is to be stated with reference to the 'deictic co-ordinates' of the typical situation of utterance. Other elements which include a component of deixis are such adverbials of place and time as 'here' and 'there' (in the vicinity of the speaker: not in the vicinity of the speaker) and 'now' and 'then' (at the time of speaking: not at the time of speaking). These are just the most obvious instances of the way in which the grammatical structure of language may reflect the spatio-temporal co-ordinates of the typical situation of utterance.

As pointed out by Lyons (1969, 275), the typical situation of utterance is egocentric. As the role of the speaker is transferred from one participant to another in a conversation, so the 'centre' of the deictic system switches ('I' being used by each speaker to refer to himself, 'you' being used to refer to the hearer). The speaker is always at the center of the situation of utterance.

Miller and Johnson-Laird (1976) contrast the deictic system with the intrinsic system, where spatial terms are interpreted relative to coordinate axes derived from intrinsic parts of the referent itself. Another way to phrase this distinction, point out the scholars, is to say that in the deictic system spatial terms are interpreted relative to intrinsic parts of ego, whereas in the intrinsic system they are interpreted relative to intrinsic parts of something else. Consider the following imperatives discussed by Miller and Johnson-Laird:

(1) Put it in front of the chair.
(2) Put it in front of the rock.

A chair, like a person, has an intrinsic front, so (1) is ordinarily understood to mean that "it" is put in a location determined by the orientation of the chair. A rock,

on the other hand, does not have an intrinsic front, so (2) is potentially ambiguous. The rock establishes a landmark, but it does not serve to orient a unique three-dimensional coordinate system around it. In this case, the coordinate system must be borrowed from one of the participants of the conversation – usually from the person who says it, but possibly from the person who hears it. Deictically, the front of the rock is usually the side of the rock that ego is facing, the side that is momentarily in front of ego, but if ego is thinking of himself as in a row of entities behind the rock, 'in front of the rock' can mean on the far side from ego.

Depending on the relations between the deictic center and the other entities, meanings can have a great diversity; we can name entities as existing "in front" of something, "behind", "in", "near", "beside", "under" something and so on.

In written discourse, we find two types of deictic situation: internal, which is related to the entities being described and external, which is related to the real world. In other words, in the first deictic situation the deictic centre is the author (the narrator) and the addressee is the reader, and in the second deictic situation the deictic centre is the character speaking and the addressee is the character being spoken to. Such being the case, a locative, when viewed out of context, is neutral in this respect: it may have been pronounced by the author or by one of the characters. For instance, *The house is on the other side of the river* does not tell us where to look for the house whose location can only be established if we know the location of the speaker in the locality being described. Cf.: *the house was on the other side of the river*, where the function of the deictic centre is performed by the environment described. In describing locative relations and their linguistic realization we cannot dispose of this information since the nature of the deictic centre affects the nature of the linguistic devices used to realize the locative function.

Research in cognitive linguistics has broadened the study of spatial expressions and focused the analyses not only on the meaning of single lexical items, but also on the way in which spatial concepts are mapped onto a linguistic form and used to structure space (Talmy 1983,1988).

The spatial concepts and frame of reference used to interrelate spatial information in texts fall into different subcategories that reflect different ways of conceptualizing the configuration under description (Carrol and Stutterheim 1993, 1015). According to the scholars, the patterns of organization observed can be grouped into three basic types: a) global frames of reference; b) point-by-point frames; c) linear frame of reference.

In the case of global reference, write the scholars, a complex structure such as the system of coordinate axes or a specific shape can be projected onto the entity under description to define sections and corresponding regions of space that encompass the entity as a whole. Typical concepts used are the coordinate axes (front, back, left, right, etc.), concepts based on shape, such as L-shape or a V-shape, or structures such as the face of the clock. With frames of reference of this kind, entities are selected for description and located relative to the various sections of the projected spatial structu-

re ("at the front", "at the corner of the L", "on one wing of the V", "at the figure 12", "at the top of the object", etc.) (Carrol and Stutterheim 1993, 1015).

The axes, point out Carrol and Stutterheim (1993, 1016), are typically projected from the standpoint of the speaker, assuming canonical orientation with respect to the entity under description. The spatial expressions used in English with a deictic-based division of space are on top/underneath, in front/in back. These contrast with the intrinsic forms at the top/at the bottom, at the front/at the back.

With Point-by-point frames the information to be expressed is structured in terms of the individual entities that make up the entity under description. Locations are defined on the basis of regions of space associated with single entities. With this frame, features are ascribed to an entity that is viewed in terms of a set of individual objects and not as a globally defined network of spaces (Carrol and Stutterheim 1993, 1016).

Linear frame of reference is based on the concept of a tour or entities lined in sequence. In the case of a tour, entities are described as they are encountered by a factive observer moving along a definite path (Carrol and Stutterheim 1993, 1016).

Writing about structuring space Carrol and Stutterheim (1993, 1020) admit that in describing the location of an entity, referred to in the following as the Trajector, locative expressions define a spatial relation between two entities 1) by denoting a specific region of space at an entity (the Landmark) whose location is typically known and 2) by locating the theme at the region of space denoted.

According to the scholars, the region of space at the Landmark can be subdivided in different sets of regions. It can be divided into a set of subspaces which include an INNER space, an EXTERIOR space, and a space at the dividing line between these two spaces, the BOUNDARY space. The BOUNDARY space typically coincides with the outer surface of an entity. A further space in this set, which is also loosely associated with entity features, is the NEIGHBORING space, that is, the space denoted in relation to an entity's "side" (Carrol and Stutterheim 1993, 1020).

The regions of space ascribed to the Landmark need not correspond in this way with entity features. This is the case with deictic expressions such as *here/there* or *in front/in back*, for example. When the reference is not explicitly mentioned, as with intransitive forms, the regions of space denoted do not imply a boundary space that corresponds with the outer surface of the entity used as the Landmark (Carrol and Stutterheim op. cit., 1021).

Carlson-Rodvansky and Irwin (1993) distinguish a viewer-centered (deictic) frame, an environment-centered (extrinsic) frame; and an object-centered (intrinsic) frame of reference.

Producing and understanding spatial expressions require coordination between perception and language: perceptual cues about spatial relationships in the environment and words that describe those spatial relationships must be mapped onto some mental representation of space in order for communication to occur.

Another approach to spatial semantics is dialogical (cf. Wold 1992), or holistic.

This analysis has the utterance as its main unit of analysis, rather than the isolated word. Such an approach aims to determine the semantic contribution of each and every element of the spatial utterance in relation to the meaning of the whole utterance – a desideratum for semantics that can be traced to Frege's (1952) "context principle". By taking its point of departure from the *whole*, rather than from the parts, it does not limit the analysis to a particular linguistic form (e.g. *over*, cf. Lakoff 1987), form class (e.g. propositions, cf. Cuyckens 1997), or a theoretically biased grammatical notion (e.g. "closed-class elements" cf. Talmy 1988).

In their paper on distributed spatial semantics, Sinha and Kuteva (1995) also argue that the situational interpretation of spatial particles, such as English prepositions, does not solely derive from the preposition itself. Rather, other form-classes which collocate with the preposition bear on the interpretation of the preposition in context. For instance, consider the following noun phrases:

(1)   The fruit in the bowl.
(2)   The crack in the bowl.

What these examples illustrate is that a particular Trajector can, in conjunction with a particular Landmark, affect the interpretation of the preposition. On the one hand, the interpretation ascribed to the phrase in (1) is that the Landmark, *the bowl*, contains or surrounds the Trajector, *the fruit.* On the other hand, in (2) the conventional interpretation is that the Trajector, *the crack*, constitutes a flaw which is part of the bowl. Additionally, *the crack* may either appear as part of the interior or exterior of the bowl. Language users do not normally derive an interpretation for (2), in which an entity identified as *the crack* is somehow located within the confines of the bowl, i.e. the interior space bounded by the bowl, in the same way that entities such as *fruit* can be. Clearly, our interpretation of the conceptual spatial relation denoted by a preposition, such as *in,* is in part constrained by sentential context, that is, by the characteristics of the process or entities which are designated. *A crack* is a different kind of entity from *fruit*. In conceptual terms, *a crack* is inherently relational, requiring a Landmark of which it constitutes a subpart, while *fruit* is a conceptually distinct entity. The different status of these two items differentially affects the exact interpretation of the relationship designated by the preposition. In this way, the meaning assigned to the preposition is "distributed" across the sentence. Since Brugman and Lakoff's work on the English preposition *over* (Brugman 1988; Brugman and Lakoff 1988; Lakoff 1987), it has been common in cognitive semantics to assume that the nature of spatial meaning is due to the contribution of distinct senses associated with a preposition, rather than allowing sentential context a significant role (Evans and Tyler http://www.sussex.ac.uk).

The conceptual framework of *situated embodiment* (Zlatev 1997) implying such a dialogical, holistic approach resulted in the theory of **Holistic Spatial Semantics (HSS).** It proposes that there exist seven universal spatial semantic categories: Trajector, Landmark, Motion, Frame of Reference, Region, Path and Direction.

Trajector (TR). It is the entity whose location or motion is of relevance. The same uses of the term can be found in Langacker (1987), Lakoff (1987) and Regier (1996). Other terms referring to this category include Figure (Talmy 1975, 1983; Levinson 1996) and Referent (Miller and Johnson-Laird 1976; Levelt 1996). Cf.:

The book (TR) *is on the table. The boy* (TR) *goes to the park.*

Landmark (LM). It is the reference entity in relation to which the location or motion of the *Trajector* is determined (Langacker 1987; Lakoff 1987; Regier 1996). Other terms include Ground (Talmy 1975, 1983; Levinson 1996), Relatum (Miller and Johnson-Laird 1976; Levelt 1996). (It should be noted that Langacker extends the meaning of the terms *Trajector* and *Landmark* outside the spatial domain). Cf.:

The book (TR) *is on the table* (LM). *John* (TR) *went to the town* (LM).

Motion. It is a binary category indicating whether there is motion or not. In most cases of the so-called "virtual motion" (Talmy 1983), "abstract motion" (Langacker 1987) and "fictive motion" (Talmy 1996), the value of this category is negative, while the value of *Path* is different from zero. Cf.:

John went (Motion) *to the town.*

Frame of Reference (FoR). The spatial position of the *Trajector* is also determined by situating it within a Frame of Reference (FoR) requiring one or more fixed *Bearings*, as well as *Axis* projecting from them. These can be defined (a) with respect to the *Landmark* where the frame is *Allocentric*, (b) geo-cardinal positions, where the frame is *Geocentric*, or (c) according to a view-point, where the frame is *Deictic*. This division is a generalization of the Intrinsic/Absolute/Relative division (proposed by Levinson (1996) and Pedersen et al. (1998)), which applies only to static projective relations on the horizontal plane. Cf.:

He is going back to the door (FoR: ALLOCENTRIC). *He is going down to the second floor* (FoR: GEOCENTRIC). *Stand behind the tree* (FoR: DEICTIC).

While almost all theories of spatial semantics acknowledge the importance of the category FoR, no two define it in the same way. Levelt (1996) uses the term *Perspective System* in a way similar to Levinson (1996). Langacker (1987) uses the term *Domain*.

Region. The category denotes a region of space always defined in relation to the *Landmark*. By specifying a value to the category Region (and FoR), the *Trajector* is related not just in terms of vague proximity (though that is also possible), but is being located more specifically with respect to the *Landmark's* INTERIOR, EXTERIOR, LATERAL, SUPERIOR, INFERIOR, ANTERIOR, POSTERIOR and other similar regions. Svorou (1993) uses the notion *Region* in a similar way. It should be noted that languages can differ substantially both on the extension of the regions which they express, and on whether they are defined on the basis of primarily functional or primarily perceptual properties of the landmark. Cf.:

The book is in the box (INTERIOR). *The book is outside the box* (EXTERIOR). *The book is by the box* (LATERAL). *The book is on the box* (SUPERIOR). *The book is under the box* (INFERIOR). *The book is in front of the box* (ANTERIOR). *The book is behind the box* (POSTERIOR).

Path. The most schematic characterization of the route of actual or virtual motion in relation to a *Region* defined by the *Landmark* in terms of the components BEGINNING, MIDDLE, and END, is similar to the distinction *Source/Medium/Goal* (Slobin, 1996). This notion is different from the notion of *Path* used by e.g. Talmy (1983) and Lakoff (1987) which is much more "imagistic". Cf.:

He came out of the room (Region: INTERIOR – Path: BEGINNING). *He passed through the room* (Region: INTERIOR – Path: MIDDLE). *He went into the room* (Region: INTERIOR – Path: END).

Direction. When the trajectory of motion is not characterized in terms of its relation to the *Region* of the *Landmark*, it can be defined in terms of its *Direction* along the axes provided by the different *Frames of Reference*. Cf.:

He went that way (FoR: DEICTIC, Direction: DISTAL). *The balloon is going up* (FoR: GEOCENTRIC, Direction: UPWARD).

The above locative relations should be universal. It would be hard to imagine a language which would be able to dispense with them: all languages operate in the spatio-temporal framework. The importance of the relations in language is well understood by linguists, who, in one way or another, keep returning to the problem.

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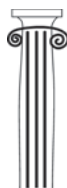
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ERDVĖS RAIŠKA KALBOJE

Santrauka

Pagrindiniai žodžiai: *deiksė, deiktinė sistema, intrinsinė sistema, trajektorius, landmarkas.*

Straipsnyje apžvelgiami būdai, kaip kalboje nusakoma objektų ir procesų vieta erdvėje. Žmogus pirmiausia išmoko nusakyti daiktų vietą erdvėje savo kūno atžvilgiu. Lingvistinė sistema, kuri leidžia kalbėti apie erdvę remiantis kalbėtojo buvimo vieta ir koordinačių ašimis, yra vadinama deiktine sistema. Ši sistema leidžia integruoti pasakymo informaciją į visą kontekstinę informaciją. Rašytiniame diskurse yra du deiktinės situacijos tipai: vidinė, kuri yra susijusi su vaizduojamais objektais, ir išorinė, kuri yra susijusi su realiu pasauliu. Kognityvinėje lingvistikoje buvo išplėstas erdvės posakių tyrinėjimas atkreipiant dėmesį ne tik į atski-

ro leksinio vieneto reikšmę, bet ir į tai, kaip erdvinės sąvokos susijusios su lingvistine forma ir vartojamos struktūrizuoti erdvei. Holistinė erdvės semantika išskiria septynias universalias erdvės semantikos kategorijas: trajektorių, landmarką, judėjimą, referencijos stuktūrą, sritį, kelią ir kryptį. Minėtosios erdvės semantinės kategorijos turėtų būti universalios. Sunku būtų įsivaizduoti kalbą, kuri galėtų be jų apsieiti: visos kalbos operuoja erdvės ir laiko rėmuose.

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Summary

Keywords: *deixis, the deictic system, the intrinsic system, the Trajector, the Landmark.*

The aim of the present article is to overview some possible approaches to structuring space or, in other words, how entities are located in the world. The first spatial reference a man learned to use was ego. The linguistic system for talking about space relative to a man's egocentric origin and coordinate axes is called the deictic system. This system allows integrating expression information into the whole of contextual information. In written discourse, there are two types of deictic situation: internal, which is related to the entities being described, and external, which is related to the real world. Research in cognitive linguistics has broadened the study of spatial expressions and focussed the analyses not only on the meaning of single lexical items, but also on the way in which spatial concepts are mapped onto a linguistic form and used to structure space. Holistic Spatial Semantics proposes that there exist seven universal spatial semantic categories: Trajector, Landmark, Motion, Frame of Reference, Region, Path and Direction that should be universal in all languages. It is hard to imagine a language which would be able to dispense with them: all languages operate in the spatio-temporal framework.