The semantics of spatial prepositions: the main trends of research

Ieva Stasiūnaitė

Vilnius University

ieva.stasiunaite@flf.vu.lt

Abstract

The paper overviews the main trends of research into the semantics of spatial prepositions, as demonstrated by a plethora of papers on linguistic data from a variety of languages. The more traditional approach focuses on the locative meaning with respect to other words—both syntagmatically and in paradigms, thus ruling out pragmatics—and considers multiple senses of the same preposition to be arbitrary. In contrast, the modern framework employs the principles of cognitive linguistics for semantic analysis, highlighting the conceptual structuring of entities or relations in extralinguistic reality. On the basis of geometric, functional, and other relations between the figure and the ground, it attempts to explicate not only prepositional synonymy, but also extensive polysemy as a form of categorisation. As a consequence, the distinct meanings of a preposition are considered to be related, deriving either from the prototypical sense or any other sense which is related to it, and arranged in a network. The modern line of investigation may provide more possibilities for researchers interested in one language and/or in cross-linguistic studies, thus contributing to the development of lexicography, translation, and other fields of applied linguistics.

Key words: Prepositions, semantics, polysemy, synonymy, cognitive linguistics, structuralism

> **"People seem never to have taken prepositions seriously."**
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> **– Jackendoff (1973: 345)**

1. Introduction

Due to its relevance to human survival, space has been the focus of many investigations, from mathematics and physics analysing it *per se* to cognitively-oriented disciplines, when research effort is devoted to the spatial activities of our mind (Miller and Johnson-Laird 1976: 378–379; O'Keefe and Nadel 1978; Fürst 1998: 63–64; Evans 2009: 19–48; Kessler and Thomson 2010). The latter type of study also involves studies on how thinking about locations and directions is encoded

in one language and/or cross-linguistically, because it constitutes a good searching ground not only for linguistic universals but also for language-specific patterns.[1]

On the one hand, expressions that convey spatial-relational information seem to manifest disparities from a typological point of view, a variety of grammatical forms positing one area of analysis. By way of illustration, consider Korean and Japanese which use a combination of special nouns and verbs, or American Indian languages with the obligatory morphology of nouns to express the categories of shape and size, as well as a number of verbal roots marked for the spatial features of the nouns that serve as their subjects or objects (Miller and Johnson-Laird 1976: 375–376; Talmy 1983: 238–239; Tyler and Evans 2003: 234; Majid et al. 2004). On the other hand, some languages, for instance, Finnish and Lithuanian, employ case marking to denote locations and directions (Tyler and Evans 2003: 234). The indigenous languages of Dagestan constitute an interesting example in this respect, too, with as many as 50 locative cases identified (Comrie and Polinski 1998). In contrast, there are many languages that do not possess such grammatical means on a par with the categories of tense, gender, or case, but instead employ rich lexical resources to deal with space. They possess terms for points of the compass, phrases for latitude, longitude, and altitude, units of length, area, and volume, labels for height, length, width, breadth, depth, and thickness; place names for geographic and political areas; labels for containers, pathways, and boundaries; districts, nodes, landmarks, paths, and edges to talk about space in cities (Miller and Johnson-Laird 1976: 376–378).

In addition to variation in grammatical and lexical means, which structural linguistics views as detached from human activities, languages also differ in their conceptualisation of spatial scenes, which reflects a cognitive approach to language as one of the manifestations of human cognition, alongside other manifestations—behaviour, reasoning, etc. The difference is particularly evident while investigating a class of expressions or "form class", which specializes for locative meaning, such as "spatial locatives" (Miller and Johnson-Laird 1976), "closed-class forms" (Talmy 1983), "spatial prepositions" (Cuyckens 1991; Landau and Jackendoff 1993), or "spatial grams" (Svorou 1994). Consider, for instance, *the bird **in** the tree*, in which the tree is conceptualised as a three-dimensional container, while in *ptička **na** dereve* (Russian), it is the function of support rather than

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[1] For an extensive overview of the relationship between language and culture, see Malinowski (1949: 207) who claims that "Language has a setting (...) Language does not exist apart from culture." The discussion of Sapir and Whorf's hypothesis, which sheds light on how much the language one speaks influences the way one thinks, can be found in Koerner (1992).

containment that becomes of paramount importance (Šeškauskienė 2003: 117–118). Some more examples include *get **into** a car* vs. *get **onto** a bus* (a car is viewed as a three-dimensional container, while a bus is a two-dimensional surface), whereas in German – ***im** Auto* vs. ***im** Bus* (both cars and buses are conceptualised as three-dimensional containers) (Talmy 1983: 267). It is no wonder that in the field of cognitive linguistics, space conceptualisation, which derives from the experience we gain from physical functioning in the environment, is used to explicate the semantics of such prepositions (see Herskovits 1986; Zelinsky-Wibbelt 1993; Tyler and Evans 2003, to name but a few). However, "the intricacy and seeming capriciousness of their behaviour" (Herskovits 1988: 27) is what poses numerous challenges in the study of locative meaning. Therefore, the purpose of this article is to discuss the benefits of the cognitive approach over the more traditional view, especially in an attempt to account for prepositional synonymy and extensive polysemy.

2. The pre-cognitive trend: structuralism or the descriptive approach

Semantic studies of prepositions in the locative role may fall into two types: the more traditional (structuralist or pre-cognitive) approach adopting the dictionary view of word meaning, and the modern (cognitive) one reflecting the encyclopaedic view of word meaning (Tyler and Evans 2003: 17). The first trend, which investigates formal structures of language as if they were autonomous, i.e. delineated from any mental activity (see Jakaitienė 1988, 2009), deals with prepositional semantics in relation with other words. On the basis of componential analysis, syntagmatic (linear) and paradigmatic (hierarchical) relations are taken into consideration (the distinction is employed in Šeškauskienė 1995; Maljar and Seliverstova 1998).

2.1. Syntagmatic treatment

The syntagmatic approach (see Jakaitienė 1988: 112–123, 2009: 61–71), which equates the semantics of a spatial preposition with its context, is illustrated by a multitude of works of the pre-cognitive trend. For instance, Vsevolodova and Vladimirskij (1982) classify Russian prepositions into a hierarchy according to certain aspects of their meaning (static vs. dynamic location, the relation of the motion to the space localised and the relation to the front/back or top/ bottom of the located area). However, the authors also investigate prefixed verbs of motion with prepositional phrases, so their interest is not so much in semantic analysis as in a thorough review of means of expressing spatial relations in modern Russian. While examining Polish locative prepositions, Klebanowska (1971) emphasises the importance of context, too, and distinguishes primary and secondary meanings, the latter being the result of too much pragmatic information included in the

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semantic structure. For instance, three meanings of the preposition **na** ('**on**') are distinguished: (1) the localised object remains in contact with the exterior surface of the localiser; (2) the localised object is located on the outer side, further from the support of the localiser; (3) the localised object occupies part of the space defined by the localiser (a variant of **w**, which corresponds to '**in**' in English). Another researcher who applied the descriptive method was the Swedish linguist Lindkvist (1976). He is considered a pioneer in the field for collecting a plethora of examples illustrating the usage of various prepositions: "He leaves no stone unturned, considering all imaginable uses, and the result is the compilation of a huge amount of 'raw material'." (Cienki 1989: 5). However, the meanings of synonymous prepositions are described cross-referentially, i.e. by means of another preposition, for instance, **about**, **around**, and **round** (Lindkvist 1976: 195).

Some Lithuanian scholars also focus on syntagmatic relations, thus giving preference to the traditional approach in their studies of spatial semantics. Jablonskis (see Palionis 1957/1959) provides the theoretical foundation for further research in this field; however, his interest is less in semantic analysis than in a classification of prepositions in Lithuanian. Šukys' (1978, 1984, 1998) works are among the most significant, focusing on a prescriptive perspective. The author claims that prepositions and seven cases notably enrich Lithuanian, but the analysis of prepositional meaning should not be delimited from the studies of case endings since "the semantics of the majority of locative prepositions is blurred"[2] (Šukys 1998: 20). The meaning of a preposition becomes clearer only in use with a noun, e.g. **per** vs. **per kiemą** (as in '**across** the yard'), **per metus** ('**during** the year'), **per jėgą** ('**by** force'), which refer to location, time, and manner, respectively (ibid., p. 13–14, 20; also see Kilius 1974: 43–52). The contribution of Pupkis' (1980), Paulauskienė and Tarvydaitė's (1986), Šukys and Pupkis' (2009) collections of rules governing the usage of Lithuanian prepositions and postpositions should not be overlooked, either. Lithuanian grammar books are also concerned with establishing the norms of prepositional usage. For instance, Ulvydas et al. (1976: 90–94) and Paulauskienė (1994: 384–396) discuss the functions of prepositions with the genitive, accusative, and instrumental cases of nouns (location, time, manner, reason, and purpose). Ambrazas (1997: 527, 2006: 284–288) analyses means of expressing locative, directional, and path meanings (cases, prepositions, adverbs) and distinguishes several types of prepositions according to their usage (with nouns in the genitive, accusative, and ablative cases) and origin

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[2] Translated by the author of this paper. The original text is as follows: "Prielinksnis vienas pats savo reikšmę irgi turi, tačiau daugelio prielinksnių ta reikšmė labai nekonkreti, neaiški."

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(primary and secondary prepositions). The attributes of the localising object and the localiser are also referred to. For instance, the analysis of **ant** ('**on**') with the genitive case of nouns denoting surfaces shows synonymy with the locative case. As far as **pas** ('**at**' as in '**at** the butcher's') is concerned, when used with a noun in the accusative case, the localising object denotes people or is expressed by a personal pronoun.

Thus, studies based on the syntagmatic treatment of locative meaning seem to constitute useful reference works for both native and non-native speakers. However, as Bennett (1975: 9) puts it, "(...) defining the meanings of prepositions by giving specific contextualized senses is like defining a phoneme by listing its allophones." Therefore, a more theoretically based trend in the traditional analysis of prepositional semantics is outlined below.

2.2 Paradigmatic treatment

In contrast to contextual meaning in linear sequences of language, the meaning of a spatial preposition in terms of paradigmatic relations relates to the substitutional or oppositional relationships it has with other lexical items (for more ideas on paradigmatic treatment in general, see Jakaitienė 1988: 102–112, 2009: 71–80). Many researchers who analyse Russian, Lithuanian, and English data focus on such (invariant) meanings in terms of necessary and sufficient conditions, when prepositions differ from each other by the presence or absence of a semantic attribute. Moreover, the meanings of the same preposition are regarded as distinct and unrelated, which illustrates the classical, or Aristotelian, model of conceptual representation (Croft and Cruse 2004: 76–77).

The application of the structuralist principle of markedness from the study of phonology for prepositional semantics is discussed extensively by Cienki (1989: 6–11). Other researchers also analyse locative meaning in terms of paradigmatic relations. For instance, on the basis of universal categories of motion, place, and path, the Russian linguist Kibrik (1970) examines prepositional semantics in the languages of Dagestan and suggests a set of concepts to describe a single preposition or several synonymous local prepositions. In the tradition of Lithuanian linguistics, he is followed by Kilius (1973a, 1973b, 1974, 1977, 1980) who employs the terms *subject* ('subjektas' in Lithuanian) and *landmark* ('orientyras') to refer to objects making up a spatial scene, and two measurements – *dynamic* and *orientational meanings* ('slankumo' and 'orientacinė reikšmė', respectively). The first shows how the subject moves, whereas the second—where the subject is

with respect to the landmark (e.g. inside, outside, underneath). In his semantic analysis, the author also initiates the use of such terms as *motion/non-motion* ('slinktis'/'rimtis' in Lithuanian), *linearity/non-linearity* ('linijiškumas'/'nelinijiškumas'), *interior/non-interior* ('vidus'/'nevidus'), *exterior/non-exterior* ('išorė'/'neišorė'), *proximity/distance* ('artumas'/'tolumas'), *horizontality/verticality* ('horizontalumas'/ 'vertikalumas'), *top/bottom* ('viršus'/'apačia') and many others. For instance, the meaning of the preposition *į* ('**to**') or the illative case of a noun is described as follows: *motion + decreasing distance + linearity + interior*, while the semantic structure of *prie* ('**near**', '**beside**') or the genitive case – *non-linear motion + exterior + proximity* (Kilius 1977: 48, 1980: 54). The work of Valiulytė (1998), his adherent, reveals similar tendencies of the time, when attention is drawn to the whole system of spatial, temporal, and causal relations. She attempts to explicate the synonymy between means of expressing the same types of relations; for instance, between (1) a case and a prepositional phrase, as in *vaikšto kieme* vs. *po kiemą* ('walks **in**' vs. '**round** the yard'), in which the latter structure prevails, while the case is stylistically marked; (2) two prepositional phrases consisting of (a) two primary prepositions, e.g. *užkopė į kalną* vs. *ant kalno* ('he climbed the hill'), (b) a primary preposition and a secondary preposition, as in *apibėgo apie* vs. *aplink trobą* ('he ran **about**' vs. '**around** the farm-house'), and (c) two secondary prepositions, e.g. *greta* vs. *šalia* ('**near**' vs. '**by**' vs. '**at**'). It is noted that the synonymy of primary prepositions is based on their lexical structure and in some cases on their contextual features. As to primary and secondary prepositions, the latter usually have a narrower, more definite meaning, whereas the former preserve a more general semantic structure (Valiulytė 1998: 412–414).

In his study of prepositional meaning in terms of paradigmatic relations, Miller (1985) introduces two universal categories: an entity, i.e. an object or abstraction in extralinguistic reality, and a relator, which is a means of expressing various relationships between entities. Five types of entities are identified: (1) the surface of objects (outer and inner); (2) the space adjacent to the surface; (3) the interior of objects; (4) the exterior of objects; (5) areas of space. Interestingly, prepositions are associated with entities, e.g. the entity *surround* explicates the meaning of ***around***, whereas the concept *superior*—***over*** and ***above***. Some prepositions (***from***, ***of***, ***to***, ***at***) are called relators as they express spatial relationships rather than indicate surfaces and parts of spaces and objects. Although the author briefly discusses the contextual peculiarities of the prepositions under study, his purpose is mainly to describe "the entire edifice of semantics" (ibid., p. 119).

Bennett's (1975) investigation into spatial and temporal meanings of English prepositions is based on deep cases (locative, source, path, goal, and extent) from Fillmore's (1968) case grammar and

such concepts as *interior*, *exterior*, *superior*, *inferior*, *higher*, *lower*, *surface*, *side*, *proximity*, etc. For instance, the semantics of the preposition ***in*** is described as *locative + interior*, ***at*** *– locative*, ***through*** *– path + locative + interior*, ***under*** *– locative + inferior*. However, since the researcher focuses more on the description of the structure of this area of semantics rather than on the meanings of single prepositions, many concepts need to be elaborated to account for the variety of usage instances.

To summarise, the traditional (structuralist or pre-cognitive) trend examines the meanings of spatial prepositions in terms of syntagmatic and paradigmatic relations, i.e. with reference to a language system as opposed to the conceptual structuring of entities and/or relations in extralinguistic reality (for an extensive overview of the differences between the classical and cognitive types of research, see Cuyckens 1993: 28–33). However, because of many references to synonyms in the traditional approach (this principle of descriptive analysis is frequently employed in dictionaries) and due to partially true universal categories, which are suggested without verification by researchers investigating paradigms, it is not always possible to explicate the semantic disparity between synonymous spatial prepositions (e.g., ***near*** vs. ***close to***; ***about*** vs. ***around*** vs. ***round***; ***over*** vs. ***above***; in Lithuanian ***po*** '**under**' vs. ***žemiau*** '**below**'; ***virš*** '**over**' vs. ***aukščiau*** '**above**'), nor the abundant cases of polysemy (*the ball **under** the table* 'kamuolys **po** stalu' vs. *to live **under** the Romans* 'gyventi Romos imperijos laikais'; *knyga **ant** stalo* 'a book **on** the table' vs. *jis pyksta **ant** manęs* 'he is angry **with** me'). These reasons are among those as to why the classical approach to prepositional meaning constitutes only one trend of semantic studies.

3. The cognitive trend: post-structuralism

Cognitive investigations, which emphasize the importance of human experience (the surrounding context, intentions, and beliefs) for the interpretation of linguistic phenomena (Langacker 1987; Lakoff 1987, 1988; Ungerer and Schmid 2006; Evans and Green 2006)[3], mark the onset of the post-structuralist period. Therefore, prepositional meaning, being encyclopaedic in nature, is analysed using different principles and new metalanguage. First of all, in their analysis, cognitivists initiated the systematic use of the semantic primitives *trajector* (TR), the object located, typically smaller

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[3] Grice (1975) refers to this approach to natural language interpretation in terms of the Cooperative Principle and the four maxims (quantity, quality, relation, and manner) as its instances. However, Sperber and Wilson (1986) claim that Grice's insights can be more appropriately framed in terms of the single principle of relevance. Also consider Fillmore's (1968) frames which assert that the meaning of a single word cannot be understood without access to all the essential knowledge that relates to that word. Support for these views comes from the field of experimental psychology (Tyler and Evans 2003: 15).

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and movable, and *landmark* (LM), the object with respect to which the trajector is located, typically larger and immovable, i.e. more perceptually salient (Langacker 1987; Lakoff 1987). The distinction roughly corresponds to Miller and Johnson-Laird's (1976) more general terms *referent* (REF) and *relatum* (REL) or Talmy's (1983, 2000) and Levinson's (2003) use of *figure* (F) and *ground* (G). The last two terms refer to the language user's point of view towards a spatial scene: mental foregrounding, or the "new" part of information as opposed to some presupposed background, or the "given" part of information, both illustrating an old idea of Gestalt psychology, e.g.:

TR/REF/F		**LM/REL/G**
the lorry	***in front of***	*the car*
a book	***on***	*the shelf*
a boy	***at***	*the stove*

According to Zlatev (2007: 327), the trajector may be static (e.g. *she is at school*) or dynamic (e.g. *she went to school*), a person or an object (e.g. *the book is on the table*), or the whole event (e.g. *she is playing in the room*). The terms *figure* and *referent*, on the contrary, usually apply to object-like entities and not events. As to a landmark/relatum/ground, views differ on whether it is always involved in a spatial relation, e.g. *Come here!* (cf. Langacker 1987; Jackendoff 1990). Furthermore, languages do not relate the trajector/referent/figure and the landmark/relatum/ground directly, but through a region which refers to a configuration of space in relation to the landmark/relatum/ground. Miller and Johnson-Laird (1976: 59) define it as "a rather indeterminate penumbra" surrounding a person (cf. personal space, or the limits of tolerable proximity around each person) or a thing. It is claimed that the understanding of a region, when it is generalized from people to inanimate objects, depends not only on the perceiver's ability to recognize what kind of object it is, i.e. the geometric properties of the landmark/relatum/ground, but also on his familiarity with what it does or what can be done with it, in other words, the functional characteristics of the landmark/relatum/ground. By way of comparison, Talmy (2000) uses the term *conformation*, whereas Jackendoff (1983, 1990) introduces the semantic primitive *place* for the same notion.

In addition, in order to explicate prepositional semantics, researchers consistently apply geometric parameters (Herskovits 1988; Hawkins 1988) and consider not only the mere location of objects in space, but also their functional (Vandeloise 1991, 1994; Maljar and Seliverstova 1998; Garrod et al. 1999) and other relations. Image-schemas (Lakoff 1987) or the so-called redescriptions (Tyler and Evans 2003) (e.g. centre-periphery, container, end-of-path, force, front-back, part-whole, path,

reflexive, source-path-goal, up-down), which operate on perceptual information, are used in the construction of complex concepts (e.g. animacy) and spatial relations (e.g. support), both of which contribute to the creation of meaning (Mandler 1992: 591). The nature of such mental representations, as opposed to linguistic ones in the traditional approach, reflects the notion of embodiment, i.e. meaning becomes determined by the nature of our bodies functioning in a fundamentally spatial reality rather than by a language system (see Ungerer and Schmid 2006). As a result, semantics, and the meaning of spatial expressions in particular, as already mentioned before, becomes an integral part of pragmatics in cognitive investigations.

Furthermore, some researchers use the principle of radial categories or semantic networks as sets of family resemblances (Lakoff 1987) to study prepositional polysemy. This cognitive reorientation (cf. lexical categories defined in terms of necessary and sufficient conditions in the traditional approach) was triggered by Rosch's (1978) psychological experiments on categorisation, resulting in the formulation of the prototype theory. According to the proponents of this line of investigation, the category of locative meaning, i.e. the perception of the world as mediated by the human conceptual system and coded by a preposition[4], is comprised from distinct but related senses stored in the mental lexicon (polysemy vs. homonymy or monosemy). However, these senses are not of equal status, some of them being more typical, closer to the so-called primary (Tyler and Evans 2003; Shakhova and Tyler 2010) or ideal (Herskovits 1988) meaning, while others—more peripheral deviations from it (cf. distinct but unrelated meanings of a preposition in the traditional approach).

Talmy's (1983) and Zlatev's (2007) studies of spatial relations are about the semantics of English prepositions, illustrating the main principles and metalanguage researchers adhere to in the cognitive approach to locative meaning. An overview of its most significant works focusing on distinct senses of prepositions follows below.

3.1 Geometric relations

Geometric investigations into prepositional semantics, which employ such tools of spatial analysis as dimensionality, internal/external boundedness, size, shape, angles, intrinsic/contextual

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[4] This contrast between the real world and its projection is not new, because it is mentioned as early as Kant (see Cienki 1989: 21). Besides, consider the distinction between *modi essendi* (various properties that objects possess as they exist in the world) and *modi intelligendi* (the features of objects as apprehended by the mind) in the works of the medieval grammarians known as the modistae (ibid.).

orientation, mobility, etc., are very similar to the traditional approach for postulating the prototypical or the so-called ideal meaning, independent of context and perceiver/conceptualiser (cf. Bennett 1975: *locative + inferior = **under***, e.g. *the ball **under** the table*). However, some variations are acceptable as different use types for each preposition. For instance, the concept of *localisation inside* is suggested in order to explain the semantics of ***in***, but it would also be sufficient to account for the usage of the preposition in the utterance *an apple **in** a bowl*, even though the apple might as well be on top of the other apples in the bowl (Cienki 1989: 12). By way of comparison, consider Hawkins (1988) who examines the category of *medium* constructed on the basis of similarity with the ideal meaning in terms of the geometric parameters of localising objects not only for ***out***, ***into*** and ***through*** but also for ***in***.

Herskovits' (1988) study is a frequently cited description of ways to express spatial-relational information, in which the ideal meanings of ***in***, ***on***, and ***at*** are examined in terms of geometric features (simple geometric relation meanings). The researcher presents the use types of the prepositions originating from the ideal meanings and motivated by four pragmatic principles (near-principles): salience, relevance, tolerance, and typicality (ibid., p. 284–290). Salience refers to a process by which just some part of the ground is emphasised, for instance, in *the cat **under** the table*, only the top of the table is important (metonymy). Relevance is related to communicative purposes, when a language user chooses a more appropriate means of expressing spatial relations, cf. *the dust **in/on** the bowl* (location inside the ground vs. contact). Tolerance motivates deviations from the ideal meaning, for instance, ***in*** is used both when an apple is in the bowl and on top of other apples, i.e. outside the bowl. The principle of typicality is associated with pragmatic information: ***behind*** presupposes proximity between two objects (e.g. *the fountain **behind** the city hall*) even though this semantic component does not constitute part of the prepositional meaning.

According to Herskovits (1986: 148–155), geometric representations (points, surfaces, containers, boundaries, etc.[5]) reflect the ideal meaning of a preposition and some cases of its usage. To illustrate, consider *the city **on** the road*, in which the road is conceptualised as a line, whereas the

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[5] The idea that semantics is not a replica of the real world is also discussed in Talmy (1983: 258-264) who refers to a range of geometric descriptions (schematization types) involving the selection of certain aspects of a spatial scene, which figure as salient, essential or relevant to represent the whole, while ignoring the remaining aspects in a particular type of situation: idealisation, abstraction and a topological type of plasticity, as well as a disjunct character, which allows alternative schematisations of the same scene (cf. ways of viewing spatial scenes in Tyler and Evans 2003: 53–54). Meanwhile, Kreitzer (1997: 301–302) notices that the same preposition, which belongs to a closed–form class, can be used in different contexts because of schematisation, e.g. *the book **on** the table*; *the chair **on** the deck*; *the plane **on** the ground*.

city—as a point in it; in *the cloud cover at 3000 feet,* the clouds are thought of as a horizontal surface, whereas in *the crack in the surface*, the surface is a thin three-dimensional lamina rather than a two-dimensional surface (for an extensive overview of the range of figure and ground geometries, see Talmy 1983: 236–258). Interestingly, in some cases, the semantic difference might become blurred, cf. *Lucy at/in the playground*, in which the preposition *at* implies the construal of a spatial situation from a distance, while *in* presupposes proximity. However, instead of being objectively measurable, the actual distances here become fuzzy and are determined by the nature of the figure and the ground, cf. *the car near the gate* vs. *the house near Oxford* vs. *Oxford near London* (Miller and Johnson-Laird 1976: 392). Norms exist for geographical distances, with respect to buildings, persons, vehicles, tables, etc., so consider the oddity of the following sentences when the figure and the ground are taken from spatial domains that are distant in the hierarchy: **the table near Oxford* or **the ashtray near the town hall*[6] (ibid.). It is noteworthy to mention the importance of extralinguistic knowledge, too, for explicating the semantics of spatial prepositions, e.g. *a stone behind the house* vs. **the house behind the stone*, or *the bench under the tree* vs. **the tree above the bench*.

However, geometric descriptions should not be relied on as the only way to examine prepositional semantics in the cognitive approach. For example, it is difficult to underestimate the relevance of vertical, horizontal, and frontal axes for the semantics of *behind*, *in front of*, *on*, *under* or *close to*, but there are cases when other factors come into play. Consider the expression *I am in front of the post office*, where the front of the building coincides with the main entrance, which entails the relevance of functional relations in extralinguistic reality for the definition of the locative meaning. Moreover, even though the English prepositions *at*, *on,* and *in* presuppose one-dimensional, two-dimensional, and three-dimensional localising objects (Vandeloise 1991: 5, 1994: 161), it is not always the case, for instance, the concept of localisation is more suitable to explicate the semantics of the preposition in such expressions as *the point at the intersection of two lines*, *the priest at the beach*, or *the minister at the church* (for more ideas on functional relations, see below). Furthermore, geometric descriptions are not very appropriate for the analysis of prepositional polysemy, cf. *be under the impression/illusion*, as well as for investigating synonymous cases, for instance, *the ball under/*below the table* or *below/*under zero*.

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[6] The symbol "*" is used to refer to syntactic, semantic, or pragmatic ill-formedness.

3.2 Functional relations

Functional analysis, the purpose of which is to describe spatial relations with reference to the observer's/conceptualiser's interaction with objects in extralinguistic reality, i.e. when emphasis is on pragmatic considerations as opposed to the functioning of words in a sentence, constitutes one more type of investigation to ascertain prepositional semantics in the cognitive trend. For instance, in the expression *to sit **by** the fire*, **by** entails not only proximity, but also the possibility to enjoy the warmth of the hearth; in the utterance *to sit **at** the table*, **at** implies not only nearness in place, but also some kind of activity (Herskovits 1988: 278; Vandeloise 1991: 11-12). Garrod et al. (1999) emphasise the importance of support in the analysis of both concrete and abstract meanings of the preposition **on** (e.g. *the painting **on** the wall*, *the light **on** the ceiling* vs. *be **on** social security*/*the bottle*). Tyler and Evans (2003: 26) use the concept of containment to define the semantics of **in** (e.g. *I awoke **in** my bedroom*), as well as its extension to the description of non-spatio-physical situations (e.g. *Anne Frank lived **in** perilous times* or *Will is **in** love*).

Functional descriptions are strongly advocated by Vandeloise (1991, 1994). For instance, while examining the meaning of the French preposition *sur* ('**on**'), he refers to the function of support (a bearer/burden relation), because the geometric conception of *sur* is deduced from functional relations: localising objects providing support are frequently conceptualised as two-dimensional surfaces. As far as *dans* ('**in**') is concerned, the author also prefers functional analysis (localising objects as containers) to geometric investigation, saying that a child learning language would always opt for *dans* even when a localising object does not possess three dimensions (cf. Tyler and Evans 2003: 25–26). Moreover, sometimes the number of dimensions of a localising object becomes irrelevant, because only the concept of localisation could explicate the prepositional meaning in such expressions as *the jewels **in** the box* vs. *the cow **in** the field* vs. *the priest **in** line* (Vandeloise 1991: 6). In addition to containment and localisation, dynamic interaction also becomes relevant in some situations, e.g. in *the bulb **in** the socket*, the socket is not only a container, but also keeps the bulb in place (Vandeloise 1994: 173–180). In other descriptions of functional relations, the concepts of visibility (e.g. *a safe **behind** a map*) and potential encounter (e.g. *the priest is going **to** Rome*) are employed to explain the locative meaning (Vandeloise 1991: 13–20).

In addition to Maljar and Seliverstova (1998), Garrod et al. (1999) and Vandeloise (1991, 1994), there are also other researchers using the tools of functional analysis to unveil the semantics of spatial prepositions. For instance, while examining the English prepositions **to** and **through**, Evans

and Tyler (2004) employ the concepts of path, goal, motion, trajectory, and orientation. Kaufmann (1993) continues the tradition in his attempt to define the semantics of the German locative **durch** ('**through**') (inclusion and path). Functional aspects are taken into consideration in the works on the meaning of spatial prepositions by Lithuanian authors, too. For instance, Stasiūnaitė and Šeškauskienė (2004) give preference to support, not contact/contiguity, in the analysis of the Lithuanian **ant** and its English equivalent **on**. In Šeškauskienė's (1995) dissertation, which investigates the semantic structure of **about**, **round**, **around**, as well as **aplink** and **apie**, geometric parameters are not always helpful, e.g. *vaikinai ir merginos ratu susėdo* **aplink** *liepą* 'boys and girls sat **around** the lime tree in a circle' (activity), *žemė sukasi* **apie** *savo ašį* 'the earth goes **around** its axis' (gravitation), **apie** *jo rankas vydavosi žalčiai* 'grass snakes would go **around** his arms' (support) (Šeškauskienė 1995: 9).

In their analysis of prepositional polysemy, some authors introduce the principle of a radial category as a set of family resemblances and refer to the prototype theory in their functional analysis. For instance, while examining the semantic structure of the Dutch preposition **in** ('**in**'), Cuyckens (1993) uses the concepts of containment and force dynamics, and claims that **in** implies a static location and a path. In order to explicate the first meaning, various types of medium or spatial configurations of the localising object are taken into consideration, such as: (1) three-dimensional, porous, bounded space (e.g. *the books* **in** *the cupboard*; *the jewels* **in** *the box*; *the foot* **in** *the shoe*; *the chair* **in** *the corner of the room*; *a nest* **in** *the hole of the wall*); (2) three-dimensional, non-porous, bounded space (e.g. *the crack* **in** *the wall*, *the nail* **in** *the board*); (3) three-dimensional, non-porous, unbounded space (e.g. *fish* **in** *the water*); (4) three-dimensional, porous, unbounded space (e.g. *the plane* **in** *the fog*, *the birds* **in** *the air*). Localising objects can have variable specifications not only in terms of their boundedness and internal consistency, but also because of the number of dimensions; for instance, they can be: (5) two-dimensional, bounded (e.g. *freckles* **in** *her face*) or (6) two-dimensional, unbounded (e.g. *he is all alone* **in** *this world*). According to the researcher, these static meanings of the preposition are related in a motivated way and bear resemblance with the meaning of a path (e.g. *he threw his tool* **in** *the box*; *he drove a nail* **into** *the board*). In the same manner, the family resemblance concept helps Cuyckens (1994) justify relations among concrete meanings of the Dutch preposition **op** ('**on**') and distinguish the prototypical one.

In order to illustrate the possibilities of applying the principle of a radial category, Taylor (1988) focuses on more than one language by investigating the concrete meanings of **on**, **over**, **above** and

their Italian equivalents. It is stated that the prepositions are not always synonymous not only between the languages (cf. a curved trajectory: *he pushed her **over** the balcony* vs. the starting point and direction of a trajectory: *la spinse **giu dal** balcone*), but also in the same language due to historical or cultural reasons. If the prepositions appear to be synonymous, the conceptualisation of the spatial relations they entail may manifest some differences, e.g. *the lamp **above** the table* vs. *the lamp **over** the table*.

3.3 Studies of meaning extension

The semantic descriptions of geometric and functional relations discussed so far focus on various ways of segmenting concrete (physical) space. Other scholars applying cognitive principles in their research refer to the theory of mental spaces (Fauconnier 1985; Lakoff 1987) and conceptual metaphors (Lakoff and Johnson 1980; Lakoff 1987; Kövecses 2002) to investigate the experiential shift from concrete to abstract space[7], or the so-called meaning extension. An important point is that relatedness is still manifest not only between the prototypical and derivative concrete senses (as shown by some studies of prepositional polysemy networks in terms of geometric and functional relations), but also between concrete and more abstract ones in such cognitive domains as time, state, manner, circumstance, cause or reason. As Putz and Dirven (1996: xi) put it, "space is at the heart of all conceptualization" (cf. Engberg-Pedersen 1999; Evans 2003). By way of comparison, consider the semantic development of the preposition ***in*** on the "spatio-temporal-existential cline" (Kwiatkowska 1997: 117), from the most concrete spatial message ***in*** *the house* to the more abstract temporal utterance ***in*** *the evening* and the most abstract existential message ***in*** *love*. As a consequence, prepositions in the locative role may "represent an excellent 'laboratory' for investigating the way in which spatial experience grounds many other kinds of non-spatial, non-physical concepts" (Tyler and Evans 2003: ix). Dirven (1993: 85) states that the likelihood of a preposition to undergo meaning extension depends on whether its spatial sense is more abstract or concrete: a preposition that identifies location more explicitly is less likely to have derivative

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[7] In cognitive linguistics, the opposition between real and non-real is avoided by extending the term "space". Thus, space is viewed as an entity for situating objects, in other words, it is not a location, but "a medium in which there are many locations" (Lakoff 1987: 542), "a medium for conceptualisation and thought" (ibid., p. 281). As a result, any possible world or situation as we conceptualise it can be represented by a mental space. The examples include: our immediate reality; fictional situations, situations in paintings, movies, etc.; past or future; hypothetical situations, abstract domains, e.g. conceptual domains, mathematical domains, etc. (ibid.). Following Lakoff (ibid. p. 543), the locative phrase *in my dream/in his poem/in the painting/in the yard there was a rabbit* indicates the type of space, i.e. a dream, a poem, a painting or the physical world; the existential *there* designates the space; the indefinite article indicates that a new entity is situated in the space; the noun *rabbit* tells what kind of entity it is; the verb *be* is a locative relation showing that the entity is located in the space.

abstract senses, while a less specific spatial preposition has a higher probability of acting as a derivational base for meaning extension. Taylor (1993) distinguishes between multiplex (*around*, *along*, *through*) and simplex (*on*, *under*, **at**) prepositions according to the extensions they can undergo on the basis of the profiled relation. The locatives in the first group are said to be more productive as to the new senses they can develop than the ones from the second group.

Lakoff's (1987: 416–461) investigation into the preposition *over*, which is based on Brugman's master thesis, is a classic example illustrating the application of the prototype theory in semantic studies. The author overviews the systematically interrelated senses constituting the radial category of the polysemous *over*, which can function as an adverb, a prefix, a predicate adjective, and a postverb. The central (prototypical) sense as manifested by the schema "above-across" (e.g. *the bird flew over the yard*) has six sub-schemas, which are distinguished according to various figure and ground configurations: the presence or absence of contact, the vertical or horizontal ground, etc. The second group of the senses in the category are the "above" ones, which are located slightly further from the central sense (e.g. *hang the painting over the fireplace*) and distinguished from it by the absence of a path and contact, but related by the location of the figure above the ground. The third group is illustrated by the "covering" schema (e.g. *the board is over the hole*), which is the variant of the second schema, because the figure has at least two dimensions and is in contact with the ground. The difference between the third and the first schemas can be accounted for by the fact that in the third one the figure's spatial parameters and the endpoint of a path become important. The remaining schemas are abstract and lie on the periphery of the category of *over*: reflexive (e.g. *turn the paper over*), excessive (e.g. *the bathtub overflowed*), and repetitive (e.g. *do it over*). The last two schemas are related by conceptual metaphor with the schemas of the first group. Interestingly, such a degree of granularity in the network of 24 senses has received criticism, because it probably exists only in the mind of the researcher rather than that of the language user (Vandeloise 1991; Sandra and Rice 1995; Sandra 1998). As Kreitzer (1997: 292) points out, the distinction between the instances of *over* as argued for by Lakoff (1987) provides a semantic network which is methodologically so unconstrained that "the model... (allows)... *across*, *through* and *above* all to be related to the polysemy network of *over*." Hence, Heine (1997 quoted in Tyler and Evans 2003: 1) rightly observes that:

> (...) *finding a satisfactory solution to the problem of how to represent the multiple meanings associated with a single linguistic form is both a central and a controversial issue for linguistic theory. The position taken on this question affects not only how we model the semantics of individual lexical items and the architecture of the mental lexicon, but also the rest of one's model of language.*

This is why Tyler and Evans's (2003) work is worth mentioning as it advocates more abstract semantic representations than those suggested by Lakoff (1987). Their position is called principled polysemy, and it holds that a particular linguistic form, e.g. the preposition *over*, is associated with a number of distinct but related senses. Any senses not directly derivable from the primary sense should be traced to a sense that is derived from it on the basis of cognitive mechanisms, such as background and encyclopaedic knowledge, embodiment, force dynamics, etc. The primary sense is defined by reference to a proto, or central, spatial scene which is determined on the basis of linguistic and empirical evidence. The linguistic evidence includes such criteria as earlier attested meaning, predominance in the semantic network, use in composite forms, etc. (Tyler and Evans 2003: 47). However, what is important is that not all contextually varying uses of a preposition constitute distinct senses. For instance, Lakoff (1987) argues that the utterances *the plane flew over the city* and *the bird flew over the wall* illustrate two distinct senses of *over*, because in the first case, the ground is extended, while in the second example, it is not. However, on the basis of linguistic evidence, Tyler and Evans (2003: 55–56) argue that such interpretations of different grounds are context-driven for the purpose of local understanding, rather than independent semantic representations associated with *over*. In other words, while the preposition presupposes a configuration between the figure and the ground, their exact metric details derive, as the authors suggest, from contextual inferencing. The remaining part of Tyler and Evans' (2003) book illustrates the application of the model in the semantic analysis of the prepositions pertaining to verticality, orientation, and involving bounded grounds. Sometimes the conclusions drawn do not tally with the entrenched semantic interpretations of some prepositions. For instance, *over* and *under* are often viewed as opposites; however, it turns out that *over* has developed a wide range of meanings that are not mirrored in the semantic representation of *under*. This might be due to the fact that in many cases the ground is the earth's surface and human interactions with entities higher than it are far more varied in range than interactions with entities below it (ibid., p. 232).

Other researchers working on prepositional semantics within the cognitive framework also analyse meaning extension. For instance, in her overview of the senses of *at* (spatial, temporal, reason, etc.), Wesche (1986/87) claims that non-spatial senses, although they seem unrelated (cf. *at someone's discretion*, *at random*, *arrive at*, *look at*), are in fact motivated and originate from the central or any other concrete sense (ibid., p. 396). Wege (1991), Dirven (1993) and Evans (2009) also focus on prepositional polysemy (e.g. *the sky above our heads* vs. *pupils above the age of 16*; *we are in a room* vs. *we are in love*; *we are on the bus* vs. *we are on alert*) and attempt to show the relationship between spatial and non-spatial meanings. A paper by Noreika (2015) deals with the motivated

polysemy of the preposition *against*. Casasanto and Boroditsky's (2003) study is among the more interesting works about meaning extension as their complex psycho-physiological experiments show that in such expressions as *putting the past **behind** us*, *proposing their theories **ahead of** time*, *looking **forward to** the future*, the conceptualisation of time is based on spatial relations, but not *vice versa* (the directionality of spatial and temporal metaphors influenced by the asymmetry of our behaviour). According to Lakoff and Johnson (1980) and Talmy (1983), this tendency to conceptualise the abstract domain of time in terms of the more concrete and accessible domain of space seems to be universal. Jamrozik and Gentner (2011) discuss psycholinguistic experiments employing statistical methods to compare the relationship between the figure and the ground in cases of meaning extension in the English prepositions *in* and *on*, e.g. *in love* or *on a roll*. Their findings show that the locatives keep an element of their spatial meaning, namely, control, when they are used to describe more abstract relations; however, *on* is concerned with greater control than *in* (ibid., p. 1593).

Recently there have been more researchers who use the principle of a radial category to investigate how much the concrete meaning of a preposition remains and/or is transformed during the process of meaning extension. Notably, many such studies focus on inflecting languages. For instance, Tabakowska (2010) studies the Polish *za* '**behind**', showing how the preposition and the prefix can be integrated into a single network. However, this idea is criticized by Pawelec (2009) who argues for a separate treatment of the preposition and the prefix. Šeškauskienė and Žilinskaitė-Šinkūnienė (2015) investigate the polysemous preposition *už* '**behind**' in Lithuanian, claiming that its concrete meanings bear motivated relations with abstract meanings, such as temporal (e.g. *maždaug už pusvalandžio sustojo mikriukas* 'a minibus stopped **after** around half an hour'). According to the authors, the relationship of the preposition *už* with the corresponding prefix *už-* would posit another interesting area of semantic study. Other researchers focus on the contrastive analysis of prepositional meanings in different languages. For instance, Šeškauskienė (2004, 2007) investigates the relationships between concrete and abstract meanings of *under, below* and their Lithuanian equivalents *po*, *žemiau*; *behind*, *beyond* and *už*, *anapus*; *by*, *beside* and *šalia*, *greta*, *ties*. It is postulated that some semantic components remain, while others become backgrounded, less important, or are suppressed altogether during the experiential shift to abstract space.

4. Conclusions

Studies of prepositional semantics in terms of syntagmatic and paradigmatic relations are based on the main principle of structuralists that no sign (thus, a word, too) possesses any independent

meaning in isolation, only in relation with other signs. On the other hand, investigations into semantic structure with reference to the world and prototypes focus on the way spatio-physical experience, the human conceptual system, and the use of language interact with each other, thus illustrating a cognitive approach, which researches locative meaning using the concepts of figure and ground, containment, path, force dynamics, and others. If structuralists view prepositions as functional/grammatical elements revealing the relations among other more semantically meaningful words in a sentence, cognitivists refer to such locatives as "a skeletal conceptual microcosm" which plays a crucial role in organising the conceptual content expressed by open-class words (usually verbs and nouns) (Talmy 2000: 179, 1983: 228; Zelinsky-Wibbelt 1993: 1; Lindstromberg 2001: 80–83). To put it differently, if these "small" words did not receive so much attention in the more traditional approach, they are considered to be the backbone of language (Regier 1995) and, therefore, are actively investigated by cognitivists. Researchers who adhere to the modern approach to semantics first attempt to establish the usually predominant concrete meanings within a prepositional category, identifying the most frequent and general (schematic) underlying meaning. Second, much attention is given to meaning extension as motivated by spatial senses and to synonymous prepositions, which is not always possible in the more traditional research.

On the other hand, although it is frequently thought that the cognitive treatment criticises the traditional studies because of their lack of thoroughness and insufficient information (Gudavičius 2000, 2007), in fact, the former approach might give a broader view of semantics (Maumevičienė 2010). Support for this idea may be found in Lewandowska-Tomaszczyk (2007) who compares cognitive linguistics to a radial category with no clear boundaries because of its relations with other branches of science. Indeed, as seen from the overview, cognitivists systematically investigate the *micro*-structure of prepositional meaning (cf. the analysis of the *macro*-structure of semantic relations in the traditional approach to language), employ some concepts used by their predecessors, and consider meaning to be divisible to some degree into smaller components, thus not overruling the componential analysis, either, which constitutes the major method in structuralist investigations.

Since inaccurately postulated concepts and cross-referential entries in dictionaries receive more and more criticism (Lindstromberg 2001; Littlemore 2009; Šeškauskienė and Žilinskaitė-Šinkūnienė 2015), prepositional semantics constitutes a topical and important area of research in the development of lexicography, machine translation, language acquisition studies and other fields of applied linguistics, thus facilitating the comprehension of relations among languages and cultures.

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References

Ambrazas, V. (ed.). 1997. *Dabartinės lietuvių kalbos gramatika*. 3rd edition. Vilnius: Mokslo ir enciklopedijų leidybos institutas.

Ambrazas V. 2006. *Lietuvių kalbos istorinė sintaksė*. Vilnius: Lietuvių kalbos institutas.

Bennett, D. C. 1975. *Spatial and Temporal Uses of English Prepositions*: *An Essay in Stratificational Semantics*. London: Longman.

Casasanto, D. and L. Boroditsky. 2003. Do we think about time in terms of space? *Proceedings of 25th Annual Conference of the Cognitive Science Society*, R. Alterman and D. Kirsh (eds). Hillsdale, NJ: Lawrence Erlbaum Associates. 216–221.

Cienki, A. J. 1989. *Spatial Cognition and the Semantics of Prepositions in English, Polish, and Russian. (Slavistische Beitrage 237).* München: Otto Sagner.

Comrie, B. and M. Polinski. 1998. The great Daghestanian case hoax. *Case, Typology and Grammar: In Honor of Barry J. Blake*, A. Siewierska and J. J. Song (eds). Amsterdam/Philadelphia: John Benjamins Publishing Company. 95–114.

Croft, W. and D. A. Cruse. 2004. *Cognitive Linguistics*. Cambridge: Cambridge University Press.

Cuyckens, H. 1991. *The Semantics of Spatial Prepositions in Dutch: A Cognitive-linguistic Exercise.* PhD dissertation, University of Antwerp.

Cuyckens, H. 1993. The Dutch spatial preposition *in*: A cognitive-semantic analysis. *The Semantics of Prepositions: from Mental Processing to Natural Language Processing*, C. Zelinsky-Wibbelt (ed.). Berlin: Mouton de Gruyter. 27–72.

Cuyckens, H. 1994. Family resemblance in the Dutch spatial preposition *op*. *Kognitive Semantik/Cognitive Semantics: Ergebnisse, Probleme, Perspektiven. Tübingen Beitrage zur Linguistik 395*. M. Schwarz (ed.). Tübingen: Günter Narr. 179–195.

Dirven, R. 1993. Dividing up physical and mental space into conceptual categories by means of English prepositions. *The Semantics of Prepositions: From Mental Processing to Natural Language Processing*, C. Zelinsky-Wibbelt (ed.). Berlin: Mouton de Gruyter. 73–97.

Engberg-Pedersen, E. 1999. Space and time. *Cognitive Semantics: Meaning and Cognition*, J. Allwood and P. Gärdenfors (eds). Amsterdam: John Benjamins. 131-152.

Evans, V. 2003. *The Structure of Time. Language, Meaning and Temporal Cognition.* Amsterdam: John Benjamins.

Evans, V. 2009. The perceptual basis of spatial representation. *Language, Cognition and Space,* V. Evans and P. Chilton (eds). London: Equinox Publishing. 21–48.

Evans, V. and A. Tyler. 2004. Rethinking English prepositions of movement. The case of *To* and *Through*. *Cognitive Linguistics* 17(4), 491–534.

Evans, V. and M. Green. 2006. *Cognitive Linguistics. An Introduction*. Edinburgh: Edinburgh University Press.

Fauconnier, G. 1985. *Mental Spaces: Aspects of Meaning Construction in Natural Language.* Cambridge (Mass., L.).

Fillmore, Ch. J. 1968. The case for case. E. *Universals in Linguistic Theory*, Bach, E. and R. T. Harms (eds). London: Holt, Rinehart and Winston. 1–88.

Fürst, M. 1998. *Psichologija*. Vilnius: Lumen leidykla.

Garrod, S. and G. Ferrier, S. Campbell. 1999. *In* and *on*: investigating the functional geometry of spatial prepositions. *Cognition* 72, 167–189.

Grice, H. P. 1975. Logic of conversation. *Speech Acts*, P. Cole and J. L. Morgan (eds). New York: Academic Press. 41–58.

Gudavičius, A. 2000. *Etnolingvistika*. Šiauliai: Lucijus.

Gudavičius, A. 2007. *Gretinamoji semantika*. Šiauliai: Šiaulių universiteto leidykla.

Hawkins, B. 1988. The category MEDIUM. *Topics in Cognitive Grammar*, B. Rudzka-Ostyn (ed.). Amsterdam: John Benjamins. 231–270.

Herskovits, A. 1986. *Language and Spatial Cognition. An Interdisciplinary Study of Prepositions in English*. Cambridge: Cambridge University Press.

Herskovits, A. 1988. Spatial expressions and the plasticity of meaning. *Topics in Cognitive Linguistics*, B. Rudzka-Ostyn (ed.). Amsterdam/Philadelphia: John Benjamins. 271–297.

Jackendoff, R. 1973. The basic rules for prepositional phrases. *A Festschrift for Morris Halle,* S. Anderson and P. Kiparsky (eds). New York: Holt, Rinehart and Winston. 345–356.

Jackendoff, R. 1983. *Semantics and Cognition*. Cambridge MA and London: MIT Press.

Jackendoff. R. 1990. *Semantic Structures.* Cambridge, MA: MIT Press.

Jakaitienė, E. 1988. *Leksinė semantika*. Vilnius: Mokslas.

Jakaitienė, E. 2009. *Leksikologija*. Vilnius: Vilniaus universiteto leidykla.

Jamrozik, A. and D. Gentner. 2011. Prepositions retain aspects of spatial meaning in abstract contexts. *Proceedings of the 33rd Annual Conference of the Cognitive Science Society*, L. Carlsson, Holscher, C. and T. Shipley (eds). Austin, TX: Cognitive Science Society. 1589–1594.

Kaufmann, I. 1993. Semantic and conceptual aspects of the preposition *durch. The Semantics of Prepositions: from Mental Processing to Natural Language Processing*, C. Zelinsky-Wibbelt, (ed.)*.* Berlin: Mouton de Gruyter. 221–248.

Kessler, K. and L. A. Thomson. 2010. The embodied nature of spatial perspective taking: Embodied transformation versus sensorimotor interference. *Cognition* 114, 72–88.

Kibrik, A. 1970. K tipologij prostranstvenich znachenij (na materiale padeznich sistem dagestanskich azijkov). *Jazijk i cheloviek*, V.A. Zvegincev (ed.). Moskva: MGU. 110–156.

Kilius, J. 1973a. Dėl prielinksnių tyrimo metodų, *Kalbotyra* 25 (3), 67–78.

Kilius, J. 1973b. Dėl vietos reikšmių sistemingumo, *Mūsų kalba* 5, 35–40.

Kilius, J. 1974. Dėl prielinksnio, *Kalbotyra* 25 (1), 43–52.

Kilius, J. 1977. Orientacinių reikšmių struktūra lietuvių kalboje (Apie vietos prielinksnių ir linksnių reikšmes), *Kalbotyra* 28 (1), 40–49.

Kilius, J. 1980. Slankumo reikšmių struktūra lietuvių kalboje (Apie vietos prielinksnių ir linksnių reikšmes), *Kalbotyra* 31(1), 34–56.

Klebanowska, B. 1971. *Znaczenia lokatywne polskich przyimków właściwych (The locative meaning of Polish prepositions proper)*. Wrocław: Osso lineum.

Koerner, E. F. K. 1992. The Sapir-Whorf Hypothesis: A preliminary history and a bibliographical essay. *Journal of Linguistic Anthropology* 2 (2), 173-198.

Kövecses, Z. 2002. *Metaphor. A Practical Introduction*. Oxford: Oxford University Press.

Kreitzer, A. 1997. Multiple levels of schematization: A study in the conceptualization of space. *Cognitive Linguistics* 8(4), 291–325.

Kwiatkowska, A. 1997. *The visuo-spatial determinants of natural language*. Lodz: Wydawnictwo Uniwersytetu Lodzkiego.

Lakoff, G. 1987. *Women, Fire, and Dangerous Things*. Chicago: the University of Chicago Press.

Lakoff, G. 1988. Cognitive semantics. *Meaning and Mental Representation*, U. Eco, Santambrogio, M. and P. Violi (eds). Bloomington: Indiana University Press. 119–154.

Lakoff, G. and M. Johnson. 1980. *Metaphors we Live By*. Chicago: Chicago University Press.

Landau, B. and R. Jackendoff. 1993. "What" and ""Where" in spatial language and spatial cognition. *Behavioural and Brain Sciences* 16, 217–65.

Langacker, R. W. 1987. *Foundations of Cognitive Grammar*, vol. 1. Stanford, California: Stanford University Press.

Levinson, S. C. 2003. *Space in Language and Cognition: Explorations in Cognitive Diversity*. Cambridge: Cambridge University Press.

Lewandowska-Tomaszczyk, B. 2007. Polysemy, prototypes, and radial categories. *The Oxford Handbook of Cognitive Linguistics*, D. Geeraerts and H. Cuyckens (eds). Oxford: Oxford University Press. 139–170.

Lindkvist, K. G. 1976. *A Comprehensive Study of Conceptions of Locality in which English Prepositions Occur*. Stockholm: Almqvist and Wiksell International.

Lindstromberg, S. 2001. Preposition entries in UK monolingual learner's dictionaries: problems and possible solutions. *Applied Linguistics* 22 (1), 79–103.

Littlemore, J. 2009. *Applying Cognitive Linguistics to Second Language Learning and Teaching*. London: Palgrave Macmillan.

Majid, A., Bowerman, M., Kita, S., Haun, D. B. M. and S. C. Levinson. 2004. Can language restructure cognition? The case for space. *Trends in Cognitive Sciences* 8 (3), 108–114.

Malinowski, B. 1949. *The Problem of Meaning in Primitive Languages. Supplement I to Charles K. Ogden and Ivor A. Richards, The Meaning of Meaning*. 10th edition. London: Routledge and Kegan Paul.

Maljar, T. N. and O. N. Seliverstova. 1998. *Prostranstvenno-distancionnye predlogi i narecija v russkom i anglijskom jazykach*. München: Sagner.

Stasiūnaitė, I. The semantics of spatial prepositions: the main trends of research. *Taikomoji kalbotyra* 2016 (8): 188–212, www.taikomojikalbotyra.lt

Mandler, J. 1992. How to build a baby: II. Conceptual primitives. *Psychological Review* 99, 587–604.

Maumevičienė, D. 2010. Prototipų teorija ir semantika, *Kalbų studijos* 17, 11–18.

Miller, J. 1985. *Semantics and Syntax: Parallels and Connections.* Cambridge: Cambridge University Press.

Miller, G. A. and P. N. Johnson-Laird. 1976. *Language and Perception.* Cambridge, MA: Harvard University Press.

Noreika, M. 2015. *Space conceptualization in English: on the polysemy of the preposition **against**.* Unpublished BA thesis. Vilnius University.

O'Keefe, J. and L. Nadel. 1978. *The Hippocampus as a Cognitive Map.* Oxford: Oxford University Press.

Palionis, J. (ed.). 1957/1959. *J. Jablonskis. Rinktiniai raštai.* Vilnius: Valstybinė politinės ir mokslinės literatūros leidykla.

Pupkis, A. 1980. *Kalbos kultūros pagrindai.* Vilnius: Mokslas.

Putz, M. and R. Dirven (eds). 1996. *The Construal of Space in Language and Thought.* Berlin: Mouton de Gruyter.

Paulauskienė, A. and D. Tarvydaitė. 1986. *Gramatikos normos ir dabartinė vartosena.* Kaunas: Šviesa.

Paulauskienė, A. 1994. *Lietuvių kalbos morfologija.* Vilnius: Mokslo ir enciklopedijų leidykla.

Pawelec, A. 2009. *Prepositional Network Models. A Hermeneutical Case Study.* Kraków: Wydawnictwo Uniwersytetu Jagiellonskiego.

Regier, T. 1995. A model of the human capacity for categorizing spatial relations. *Cognitive Linguistics* 6 (1), 63–88.

Rosch, E. 1978. Principles of categorization. *Cognition and Categorization*, E. Rosch and B. B. Loyd (eds). New York, London: Hillsdale. 27–48.

Sandra, D. 1998. What linguists can and can't tell you about the human mind: a reply to Croft. *Cognitive Linguistics* 9: 361-378.

Sandra, D. and S. Rice. 1995. Network analyses of prepositional meaning: mirroring whose mind–the linguist's or the language user's? *Cognitive Linguistics* 6 (1), 89–130.

Šeškauskienė, I. 1995. *A Contrastive Analysis of some Spatial Prepositions in English and Lithuanian.* Daktaro disertacijos santrauka, Vilnius: Vilniaus universitetas.

Šeškauskienė, I. 2003. Proximity in English and Lithuanian, *Kalbotyra* 53(3), 117–125.

Šeškauskienė, I. 2004. The extension of meaning: spatial relations in English and Lithuanian. *Imagery in Language,* B. Lewandowska-Tomaszczyk and A. Kwiatkowska (eds). Peter Lang. 373–384.

Šeškauskienė, I. 2007. Artumo santykiai anglų ir lietuvių kalbose: kai kurie perkeltinės lokatyvų reikšmės ypatumai, *Filologija* 12, 85–94.

Šeškauskienė, I. and E. Žilinskaitė-Šinkūnienė. 2015. On the polysemy of the Lithuanian UŽ. A cognitive perspective. *The Baltic International Yearbook of Cognition, Logic and Communication. Perspectives on Spatial Cognition. Vol 10.* 1–38. Available at http://newprairiepress.org/cgi/viewcontent.cgi?article=1101&context=biyclc. Accessed 16 September 2016.

Shakhova, D. and A. Tyler. 2010. Taking the principled polysemy model of spatial particles beyond English: the case of Russian *za. Language, Cognition and Space: The State of the Art and New Directions*, V. Evans and P. Chilton (eds.). London, Oakville: Equinox. 267–291.

Sperber, D. and D. Wilson. 1986. *Relevance: Communication and Cognition.* Oxford: Blackwell.

Stasiūnaitė, I. and I. Šeškauskienė. 2004. On the meaning of *on/ant*: how relevant is the concept of contact? *Kalbotyra* 54(3), 69–75.

Svorou, S. 1994. *The Grammar of Space*. Amsterdam: John Benjamins.

Šukys, J. 1978. *Prielinksnių vartojimas*. Kaunas: Šviesa.

Šukys, J. 1984. *Linksnių ir prielinksnių vartojimas*. Kaunas: Šviesa.

Šukys, J. 1998. *Lietuvių kalbos linksniai ir prielinksniai: vartosena ir normos.* Kaunas: Šviesa.

Šukys, J. and A. Pupkis (eds). 2009. *Kalbos patarimai. Sintaksė: prielinksnių ir polinksnių vartojimas (S2)*. Vilnius: Mokslo ir enciklopedijų leidybos institutas.

Tabakowska, E. 2010. The story of ZA: in defense of the radial category. *Studies in Polish Linguistics* 5, 65–77.

Talmy, L. 1983. How language structures space. *Spatial Orientation. Theory, Research and Application*, H. Pick and L. Acredolo (eds). New York: Plenum. 255–282.

Talmy, L. 2000. *Toward a Cognitive Semantics*, vols1, 2. Cambridge, MA: MIT Press.

Taylor, J. R. 1988. Contrasting prepositional categories: English and Italian. *Topics in Cognitive Linguistics*, B. Rudzka-Ostyn (ed.). Amsterdam/Philadelphia: John Benjamins. 299–326.

Taylor, J. R. 1993. Prepositions: patterns of polysemization and strategies of disambiguation. *The Semantics of Prepositions: From Mental Processing to Natural Language Processing*, C. Zelinsky-Wibbelt (ed.). Berlin: Mouton de Gruyter. 151-179.

Tyler, A. and V. Evans. 2003. *The Semantics of English Prepositions. Spatial Scenes, Embodied Meaning and Cognition.* Cambridge: Cambridge University Press.

Ulvydas, K. and V. Ambrazas, A. Valeckienė (eds). 1976. *Lietuvių kalbos gramatika* 3: *Sintaksė*. Vilnius: Mokslas.

Ungerer, F. and H. J. Schmid. 2006. *An Introduction to Cognitive Linguistics.* London: Longman.

Valiulytė, E. 1998. *Dabartinės lietuvių kalbos sintaksiniai sinonimai: vietos, laiko ir priežasties raiška*. Vilnius: Mokslo ir enciklopedijų leidybos institutas.

Vandeloise, C. 1991. Beyond geometric and logical descriptions of space. A functional description. *Spatial Prepositions. A Case Study from French*, C. Vandeloise, C. (ed.). Chicago: the University of Chicago Press. 3–20.

Vandeloise, C. 1994. Methodology and analyses of the preposition **in.** *Cognitive Linguistics* 5(2), 157–184.

Vsevolodova, M. V. and E. J. Vladimirskij. 1982. *Sposoby vyrazhenija prostranstvennykh otnosheniij v sovremennom russkom jāzyke*. Moskva: Russkij jāzyk.

Wege, B. 1991. On the lexical meaning of prepositions: a study of **above**, **below** and **over.** *Approaches to Prepositions*, G. Rauh (ed.). Tübingen: Günter Narr. 275–296.

Wesche, B. 1986/87. At ease with "at". *Journal of Semantics* 5, 385–398.

Stasiūnaitė, I. The semantics of spatial prepositions: the main trends of research. *Taikomoji kalbotyra* 2016 (8): 188–212, www.taikomojikalbotyra.lt

Zelinsky-Wibbelt, C. 1993. Introduction. *The Semantics of Prepositions: From Mental Processing to Natural Language Processing*, C. Zelinsky-Wibbelt (ed.). Berlin: Mouton de Gruyter. 1–24.

Zlatev, J. 2007. Spatial semantics. *The Oxford Handbook of Cognitive Linguistics*, D. Geeraerts and H. Cuyckens (eds). Oxford: Oxford University Press. 318–350.

Erdvės prielinksnių semantinių tyrimų apžvalga

Ieva Stasiūnaitė

Santrauka

Šiame straipsnyje apžvelgiami gausūs erdvės prielinksnių semantiniai tyrimai iliustruojant juos įvairių kalbų pavyzdžiais. Tradiciniu požiūriu prielinksnio reikšmė nagrinėjama atsižvelgiant į jo tarpusavio santykius su kitais žodžiais, t.y. sintagmose, kai pabrėžiama konteksto svarba, ir paradigmose, atspindinčiose hierarchinius santykius kalbinėje sistemoje. Ir vienu, ir kitu atveju semantika ir pragmatika yra atskiriamos, o įvairios prielinksnio reikšmės nėra laikomos susijusiomis. Tačiau dėl nuorodų į sinonimus (šis deskriptyvinėje analizėje naudojamas principas dažnai pasitaiko žodynuose) ir dėl iš dalies teisingų universalių kategorijų, kurias be verifikacijos siūlo paradigmas tiriantys mokslininkai, klasikiniuose tyrimuose ne visada pavyksta tiksliai diferencijuoti prielinksnio reikšmes. Štai kodėl pastaruoju metu vis labiau pereinama prie kognityvinio požiūrio į semantiką, kai prielinksnio reikšmė tiriama per kalbos ir mąstymo ryšį, akcentuojant žmogiškosios patirties svarbą. Prielinksnio polisemijos ir sinonimijos analizei kognityvistai vartoja figūros ir fono terminus, nuosekliai taiko geometrinius parametrus bei atsižvelgia ne tik į objektų išdėstymą erdvėje, bet ir į jų funkcinius (talpos, jėgos dinamikos) ir kitus ryšius. Be to, įsivedamas laipsniuojamų radialinių kategorijų principas, paaiškinamas giminės panašumais, bei remiamasi iš geštaltų psichologijos kildinama prototipų teorija, tad kitaip nei klasikiniuose reikšmių aprašuose, prielinksnio polisemija yra laikoma motyvuota, o reikšmių perkėlimas grindžiamas mentalinių erdvių bei konceptualiosios metaforos teorijomis. Straipsnyje teigiama, kad kognityvinis požiūris gali pateikti daugiau reikšmės niuansų kalboje ir/ar tarp kalbų, todėl tokie tyrimai yra ypač aktualūs ir svarbūs plėtojant leksikografijos, mašininio vertimo idėjas, kalbų mokymo(si) procese, o taip pat suvokiant ryšius tarp kalbų ir kultūrų.

Raktiniai žodžiai: Prielinksniai, semantika, polisemija, sinonimija, kognityvinė kalbotyra, struktūralizmas

The semantics of spatial prepositions: the main trends of research

Ieva Stasiūnaitė

Summary

In this paper, the semantic treatment of spatial prepositions is examined, as demonstrated by abundant papers on linguistic data from various languages. The more traditional approach focuses on the prepositional meaning with respect to other words, both syntagmatically, when the surrounding context becomes of paramount importance, and in paradigms, which reflect hierarchical relations in a language system. In both cases, semantics and pragmatics are separated, while distinct meanings of a preposition are considered to be arbitrary. However, because of many references to synonyms (this principle of descriptive analysis is frequently employed in dictionaries) and due to partially true universal categories, which are suggested without verification by researchers investigating paradigms, it is not always possible to explicate the semantic disparity between similar or synonymous spatial prepositions or the abundant cases of polysemy in the traditional approach. This is why it is not the only trend of investigations into prepositional meaning. The modern framework employs the principles of cognitive linguistics, highlighting the conceptual structuring of entities or relations in extra-linguistic reality. It focuses on prepositional polysemy and synonymy in terms of geometric parameters, as well as functional (containment, force dynamics, etc.) and other relations between the figure and the ground. Researchers also introduce the principle of a radial category explicated by family resemblance and refer to the theory of prototypes. As a consequence, the distinct meanings of a preposition are regarded as related, originating from the most prototypical one, whereas the experiential shift from concrete to abstract space is accounted for by the theories of mental spaces and conceptual metaphors. It is claimed that it may be more beneficial to follow the cognitive line of investigation so as to exhaust the intricacies of spatial semantics in one language and/or cross-linguistically, thus contributing to the development of lexicography, machine translation, in the process of learning and/or teaching languages, as well as in facilitating the comprehension of relations among languages and cultures.