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On the Motivated Polysemy of Some Prepositions: from Concrete to Abstract Senses of the Lithuanian ŽEMIAU, PO and the English BELOW, UNDER

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Everything is related to everything else.
But near things are more related than distant things.
(Waldo R. Tobler)

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INTRODUCTION

Prepositions have always generated problems not only for learners and teachers but also to linguists due to "the intricacy and seeming capriciousness of their behaviour" (Herskovits 1988: 27). Approaches to the semantics of these closed-class forms in scholarly literature are rather different. For instance, the classical (descriptive or structuralist) treatment focuses on locative meaning with respect to other words, usually skipping semantic intricacies in different languages. One line of research deals more with syntagmatic relations and often treats the meaning of a preposition in terms of context in which it occurs (Lindkvist 1968, 1976; Klebanowska 1971; Kilius 1974; Ulvydas *et al.* 1976; Šukys 1978, 1984, 1998; Vsevolodova and Vladimirskij 1982; Paulauskienė and Tarvydaitė 1986, Paulauskienė 1994, 2015; Ambrazas 1997, 2006; Šukys and Pupkis 2009, etc.). The other line of research, roughly referred to as paradigmatic, defines such meaning in terms of substitutional or oppositional relationships with other prepositions (Kibrik 1970; Bennett 1975; Miller 1985; Kilius 1973a, 1973b, 1974, 1977, 1980; Valiulytė 1998, among others). However, the classical approach seems to encounter at least two problems. First, the approach can hardly escape cross-referential definitions, which can be attested in dictionaries, especially of smaller languages like Lithuanian, as researchers investigating paradigms often disregard the fine-drawn distinction between synonymous prepositions. Second, the classical approach seems to ignore the relationship between numerous related senses of prepositions, which results in a multitude of polysemous cases usually presented in most pedagogical and reference grammar books as arbitrary and idiomatic (for more criticism, see Taylor 1988; Boers and Demecheleer 1998; Yates 1999; Lindstromberg 2001; Šeškauskienė 2001; Navarro i Ferrando 2006; Littlemore 2009; Šeškauskienė and Žilinskaitė-Šinkūnienė 2015; Stasiūnaitė 2018; Đorđević 2018).

Modern framework, adhering to the principles of cognitive linguistics, as shown in the works of Talmy (1983), Lakoff (1987), Langacker (1987) and many other researchers, handles semantic subtleties in a different manner. In particular, prepositions are approached as capable of organizing conceptual content arising from the experience that we gain from our physical functioning in the environment. As Zelinsky-Wibbelt (1993: 4) points out, they are "highly representative of the nature of linguistic meaning: conceptualization in this paradigm comprises linguistic meaning, or, put the other way round, linguistic interpretation equates with conceptualization"

(see also Herskovits 1986; Langacker 1987; Tyler and Evans 2003). A change of research methodology is believed to provide a more satisfactory treatment of the situations which proved problematic in earlier studies. For instance, cognitive studies take prepositions with similar semantic structure seriously, ruling out the possibility of absolute synonymy. Another difference pertains to the way this line of analysis accounts for polysemy, advocating systematically motivated polysemy, when senses are derived either from the prototypical meaning or any other sense related to it and arranged in a network. In other words, cognitively-oriented linguists want "to dismantle these two general assumptions: on the one hand, that these words are easy to learn or have exact interlinguistic correspondences, and on the other hand, that their use is otherwise chaotic or lexicalized" (Navarro i Ferrando 2006: 167).

The most relevant studies of prepositional semantics in a cognitive vein are as follows. Jackendoff (1983, 1987, 1990), Langacker (1984, 2008, 2009), Fauconnier (1985, 2007), Lakoff (1987, 1988), Petruck (1996), Kemmer and Barlow (2000), Oakley (2007, 2012) present the main tenets of cognitive linguistics from compatible approaches, discussing such conceptual structures as mental spaces, frames, image schemas and idealized cognitive models. Other researchers, for instance, Lakoff and Johnson (1980), Johnson (1987), Taylor (1993, 1995), Svorou (1994), Dewell (1994), Boers (1996), Talmy (2000, 2007), Coventry *et al.* (2001), Tyler and Evans (2003), Casasanto and Boroditsky (2003), Levinson (2003), Zlatev (2007), Mulder (2007), Evans (2010), Kessler and Thomson (2010), to name but a few, focus on the dimensions of conceptualization: selection, prominence, perspective, dynamicity and imagination, all having analogues in visual perception. The component, relational and integrative levels of conceptualization are defined by Talmy (1983) and Kreitzer (1997). Other authors, for instance, Zelinsky-Wibbelt (1993), Regier (1995), Navarro Ferrando (2006), Šeškauskienė and Juknevičienė (2020), tackle language-specific and universal patterns of conceptualization, as attested by prepositional semantics.

What follows further is an overview of the different frameworks within the cognitive approach, shedding light on the most important works on one or several senses of selected prepositions in one language and/or cross-linguistically. The preponderance of studies relating to English, German, French or Dutch is in fact a reflection of the sparsity of material published on other languages, such as Lithuanian and other inflecting languages. The relevance of geometric parameters is tackled by Clark (1973, 1974), Miller and Johnson-Laird (1976), Talmy (1983), Herskovits (1988), Hawkins

(1988), Dirven (1993), Mikulskas (2009); however, such descriptions do not always reveal all the subtleties of prepositional meaning. Thus researchers introduce functional relations arising from interactions between objects or between objects and the perceiver in extralinguistic reality. Among the most significant contributions offering valuable insights into the role of function are the works by Maljar and Seliverstova (1998), Vandeloise (1991, 1994), Kaufmann (1993), Šeškauskienė (1995, 2001), Garrod *et al.* (1999), Carlson-Radvansky and Logan (1997), Carlson-Radvansky *et al.* (1999), Coventry *et al.* (2001), Tyler and Evans (2003), Coventry and Garrod (2004), Stasiūnaitė and Šeškauskienė (2004), Landau (2017), Žilinskaitė-Šinkūnienė *et al.* (2019a, 2019b), and many others.

While the above geometric and functional descriptions focus on distinct senses of prepositions within the language and/or cross-linguistically, other researchers succumb to the idea of motivated polysemy (Wesche 1986/87; Lakoff 1987; Taylor 1988, 1993; Wege 1991; Dirven 1993; Cuyckens 1993, 1994; Haspelmath 1997; Rhee 2002; Tyler and Evans 2003; Navarro i Ferrando 1998, 2006; Jamrozik and Gentner 2011). Some linguists, for instance, Tabakowska (2010), Šeškauskienė and Žilinskaitė-Šinkūnienė (2015), Noreika (2015), Stasiūnaitė (2018), employ a radial category approach to investigate the relatedness of prepositional senses in inflecting languages. However, these studies are mainly supported by qualitative examinations, the majority of them drawing on empirical evidence from one language, while quantitative research into prepositional semantics relying on data from several languages is still rather scarce. Therefore, this dissertation presents a corpus-based study of senses pertaining to a group of selected prepositions from two languages, relying on contemporary cognitive approach.

The object of the dissertation. The object of the analysis is the semantic investigation of four prepositions, all designating the lower location of one entity with respect to the other in Euclidean space, from two typologically different languages: the Lithuanian ***žemiau***, ***po*** and the noun cases that they govern, making a prepositional phrase together, and ***below***, ***under***, which are considered their primary translation equivalents to English by some bilingual dictionaries (Piesarskas and Svecevičius 1997; Piesarskas 2006).

Data and methodology. The semantics of the Lithuanian ***žemiau***, ***po*** and the English ***below***, ***under*** is investigated by drawing on authentic empirical data, for corpus-based research reduces the linguist's subjectivity as well as corroborates the hypotheses put forward. The prepositions have been extracted from randomly selected concordance lines in the Corpus of the Contemporary Lithuanian Language (CCLL) and the British National

Corpus (BNC). In order to carry out a systematic and exhaustive semantic analysis, the study has been limited to fiction which manifests the occurrence of a wide range of senses related to physical and non-physical space, which might not be characteristic of other types of discourse (e.g. academic) and, therefore, fail to exhaust the prepositional meaning under investigation.

The research employs quantitative and qualitative methods as well as the principles of contrastive linguistics to distinguish the similarities and differences of the prepositions within the languages and cross-linguistically. The present investigation also takes into consideration the principles of cognitive linguistics for prepositional semantics (Talmy 1983, 2000), the Principled Polysemy Model (Tyler and Evans 2003), differentiating between distinct senses and their contextual variants produced for local understanding, and the Theories of Mental Spaces (Fauconnier 1985, 2007) and Conceptual Metaphor (Lakoff and Johnson 1980/2003), both employed to illustrate the systematically motivated relationships between the established concrete and abstract senses. The radial category approach (Lakoff 1987) with its roots in the Prototype Theory (Rosch 1975, 1978) is used to set up the semantic networks of the selected prepositions organized with respect to the primary sense.

The aims and objectives of the research. The present analysis has a two-fold purpose. Firstly, it aims at taking a fresh look at the semantics of the Lithuanian ***žemiau***, ***po*** and the English ***below***, ***under***, as reflected in corpus data, proposing a more consistent and plausible classification of their senses as compared to the ones presented in dictionary entries and earlier works on prepositional meaning. Cognitive linguistics, which explains language data by appealing to how the human mind works, is considered a feasible tool for this undertaking. The second goal is to test the theoretical framework of this approach to language, in particular Tyler and Evans' (2003) Principled Polysemy Model, on a set of languages to which it has not been applied yet.

In order to reach the aims of the thesis, the following objectives have been set:

(1) to identify concrete and abstract senses of the prepositions by analyzing concordance lines drawn from the Lithuanian and English corpora;
(2) to identify links between the senses and provide a semantic network of each preposition under study;
(3) to compare the senses and their networks within and across the languages;

(4) to interpret the semantic tendencies in the light of prior studies of prepositional meaning and discuss their wider implications.

The novelty and relevance of the dissertation. Previous studies have focused on concrete senses of the Lithuanian ***žemiau***, ***po*** and the English ***below***, ***under***, disregarding meaning extensions associated with non-physical space, or discussing them rather sporadically as idiosyncratic, unrelated senses. However, motivated polysemy has been neglected altogether, by Lithuanian scholars in particular, who rely more on the classical approach to prepositional semantics. Therefore, the application of the methodology and principles employed in cognitive linguistics for the Lithuanian data has been a relatively recent trend (Šeškauskienė and Žilinskaitė-Šinkūnienė 2015; Stasiūnaitė 2018; Žilinskaitė-Šinkūnienė *et al.* 2019a, 2019b, etc.), constituting a promising area of research to account for prepositional meaning. The present research is also a significant contribution to contrastive studies which usually pose great challenges for language researchers.

Claims to be defended:

(1) The Lithuanian ***žemiau***, ***po*** and the English ***below***, ***under*** are all motivatedly polysemous, forming radially structured categories, where some uses of the prepositions that seemingly have nothing in common are nevertheless linked through other, intermediate uses;

(2) Different types of F (the object which is located in a spatial scene) and G (the reference entity in relation to which F is localized), their geometric and functional relationships, and conceptual metaphor constitute the senses of the prepositions and help discriminate between those senses;

(3) The prepositions under study manifest different ways of parsing space within and across the languages: ***žemiau*** and ***below*** give preference to geometric space characterized by topological properties of spatially aligned objects, whereas ***po*** and ***under*** entail not only geometric but also qualitative space associated with functional relations between the entities;

(4) In terms of the frequency of their occurrence, ***žemiau*** and ***below*** manifest similarity by developing senses related to physical rather than non-physical space, whereas ***po*** and ***under***, even though segmenting space in a similar (functional) way, are different in that ***po*** gives preference to non-physical space, while ***under*** tends to develop senses in more physical contexts;

(5) The selected prepositions differ as to the complexity of their semantic structure: ***žemiau*** and ***below*** are rather simple compared to ***po*** and

under, both in terms of the number of senses and their positioning in the established semantic networks;

(6) Cross-linguistically, ***žemiau*** and ***below*** are closer synonyms than ***po*** and ***under***.

The theoretical and practical value of the research. Attempting to exhaust the meaning of the Lithuanian ***žemiau***, ***po*** and the English ***below***, ***under***, it not only contributes to international studies in a cognitive vein but also supports the efforts of scientists in Lithuanian linguistics still preferring the traditional line of investigation into prepositional meaning. Moreover, the analysis focuses on typologically different languages, referring not only to the prepositions but also making a tentative attempt to relate their semantics to the noun cases that they govern in Lithuanian, so it is the first contrastive investigation of this kind in cognitive linguistics in Lithuania and abroad. Furthermore, the dissertation adds to a growing body of corpus-based studies pursued by Lithuanian researchers, pushing the discipline into a stream of analysis that is more empirical, ultimately producing more accountable results. Thus, the dissertation is of practical value for lexicographers, translators, language learners and teachers, struggling to comprehend the semantic structure of the prepositions studied. Finally, the dissertation not only adds to the knowledge of word meaning and prepositional meaning in particular, but also facilitates the comprehension of the underlying cognitive principles of the conceptualization of space in different languages. Thus, the findings are beneficial to researchers working in the fields of cognition and machine translation.

The structure of the dissertation. The present study consists of the following chapters. The introduction defines the object of the dissertation, sets the aims and objectives, describes the novelty and importance of the research, explains the claims to be defended and the theoretical and practical value of the investigation.

Chapter 1, which consists of four parts, reviews the most relevant research on spatial relations, serving as the theoretical framework of the dissertation. The first section deals with space in physical and human sciences. In the second section, an overview of the main trends of research on prepositional semantics is provided. Namely, it sheds light on the classical approach, discussing syntagmatic and paradigmatic studies, and deals with a cognitive line of investigation in terms of geometric and functional aspects in the semantic structure of prepositions, and most importantly, their motivated polysemy. The third section is devoted to explaining the niche for the present research, in particular, why the Lithuanian ***žemiau***, ***po*** and the English ***below***, ***under*** may constitute an

interesting object of investigation. The fourth section provides a brief discussion of the meaning of some Lithuanian noun cases, which might be of particular value in the semantic analysis of the selected prepositions in Lithuanian as an inflecting language.

Chapter 2 provides information on the procedure of data collection and research methodology, which distinguishes between senses conventionalized in semantic memory and their contextual variants produced for the purpose of local understanding. It also sets criteria for primary sense identification and explicates the key notions employed in the present study.

Chapter 3, which is the longest part of the dissertation, presents the results of the investigation, more specifically, motivated polysemy of the selected prepositions in Lithuanian and English. Qualitative parameters, such as types of F and G, their functional, geometric and other relationships, in addition to quantitative factors associated with the occurrence of these entities in a spatial relation and the instantiation of the established senses are taken into consideration. The chapter is divided into four parts. The first section provides an overview of the semantic structure of the Lithuanian ***žemiau***, as extracted from the corpus data. Namely, it defines the primary sense of the preposition by shedding light on the key components of the proto-scene and the major types of F and G involved in it. Furthermore, geography, measurement and value senses are discussed in the same manner and, finally, the semantic network of the preposition is provided. The second section focuses on the semantic structure of the Lithuanian ***po***, as attested by the corpus data. It starts with the definition of the primary sense, discussing the peculiarities of the proto-scene and the examples of F and G associated with it. Later the other senses of the preposition, both concrete (cover, personal space, direction, and pervasion) and abstract (temporal sequence, temporal consistency, temporal persistence, lateness, submission, annoyance, truth, and distributive quantity) are analyzed and, finally, two semantic networks are suggested. The third section describes the senses of the English ***below***, as shown by concordance lines drawn from the corpus. Namely, it defines the primary sense of the preposition on the basis of the key elements of the proto-scene and the major types of F and G involved in it. Later geography, measurement and value senses are investigated, and, finally, the semantic network is provided. The last section investigates the meaning of the English ***under***, as illustrated by the corpus data. It starts with the definition of the primary sense, shedding light on the proto-scene and F and G associated with it. Later the other senses (cover and personal space, both pertaining to physical space, and naming, less, value and experience, all illustrative of non-physical space) are analysed and the semantic network of

the preposition is provided. In the empirical part of the dissertation, an attempt is made to explain not only the most important qualitative parameters, but also quantitative factors related to the senses and to reveal their similarities and differences within the languages and from a cross-linguistic perspective.

Chapter 4 gives a brief comparative dimension in the present analysis, both within the languages studied (***žemiau*** vs. ***po*** and ***below*** vs. ***under***) and cross-linguistically (***žemiau*** vs. ***below*** and ***po*** vs. ***under***).

Finally, the research draws conclusions based on the findings of the study, which are followed by references, data sources, appendices, a list of the author's publications, and papers presented in international conferences.

1. PREVIOUS RESEARCH ON SPATIAL RELATIONS

The purpose of this chapter, which consists of three main parts, is to give theoretical background for the present study and situate it within the context of the most topical research on the semantics of spatial prepositions. The first section presents the conception of space in physical sciences and the humanities, the latter including inquiry into space as reflected in linguistic structure. The second part examines two major trends in the analysis of spatial semantics, prepositions in particular, as demonstrated by a plethora of papers on cross-linguistic data. The classical (descriptive or structuralist) approach defines locative meaning from syntagmatic and paradigmatic points of view. Then follows a review of contemporary research which adheres to the principles of cognitive linguistics in the description of concrete and abstract senses. The last section explains the novelty and relevance of the present investigation into the semantics of the selected Lithuanian and English prepositions, which relies on the cognitive approach to meaning.

1.1 Space in physical and human sciences

Space has been the focus of a multitude of studies, from mathematics and physics, analysing it *per se*, to psychology, philosophy and linguistics, which devote their research effort to its significance in human society and culture. For instance, physical sciences put forward two theories, the absolute and the relative, to comprehend the concept of space. Aristotle advocates an absolute theory, identifying space with a three-dimensional area (*topos*) that exists separately from objects and humans filling it in, a position later defended by Descartes, Newton and Kant. This type of conception allows to label locations by their coordinate values as precisely as a person might wish. In contrast, the relationalist point of view, associated with Aristotle's pupil Theophrastus and later with Leibniz, refers to space as a system of relations between objects. It provides three coordinates, just as absolute space does, but no fixed units of angle or distance, which makes it more natural in everyday use (Miller and Johnson-Laird 1976: 57-58, 380; Mackenzie 1992: 254).

In addition to studies of space in physical sciences, there is also research on location, direction and motion carried out in the humanities. For instance, psychologists believe that spatial organization is of central importance for cognition since our perceptual and/or motor experience is constrained by the

physical world that we live in and our bodies (Miller and Johnson-Laird 1976: 375ff; Tyler and Evans 2003: 108). As to philosophical discourse, it is marked by a perennial dispute over the origins of the perception and conception of space. By way of illustration, Aristotle and Locke emphasize the relevance of empirical experience, while Plato claims that space, like time, is innate, intrinsically incorporated in the human mind as it affects our sensations, the idea later supported by Kant and consonant with modern views (Kačerauskas 2007: 48-49; Chilton 2010: 1-2). For instance, various experiments in the field of physiology show that we position ourselves in the environment, plot our route ahead and may even remember where we have been due to the hippocampus and entorhinal cortex machinery, or the so-called the brain's GPS (O'Keefe 1999; Evans 2009: 19-48; Wills and Cacucci 2014; see also Kitamura *et al.* 2015). The explanation of how these cells work was stunning enough to award O'Keefe and his colleagues the Nobel Prize in Physiology or Medicine in 2014. However, the discovery has also sparkled further research on neurons and cognitive maps. For instance, Wood (2019) claims that the area of the brain associated with spatial awareness and planning actions also plays a crucial role in decision making. Cepelevicz (2019b) offers other interesting evidence of the brain's GPS, claiming that hippocampus cells which control an animal's spatial awareness can reorient themselves to favor locations that are full of food, likewise, humans also behave in a way that suggests that they map out their view of the world by emphasizing any type of valuable non-spatial information, including sights, sounds and abstract concepts, such as social hierarchy or time (Addis and Schacter 2012; Constantinescu *et al.* 2016; Aronov *et al.* 2017; Cepelevicz 2019a, 2019b; see also Gärdenfors 2000 quoted in Rajagopalan 2019). The most ambitious suggestions from other research teams even venture that neurons gathering mental maps of physical space can reprogram themselves to reflect not only our experiences, activities and priorities, but also perception and memory, enabling us "to behave more efficiently, to learn a lot faster" (see Stachenfeld quoted in Cepelevicz 2019b).

However, noninheritable factors for understanding spatial behaviour should not be ruled out, either. For instance, in addition to egocentric skills, when objects are identified with respect to our own location and orientation, we also develop allocentric abilities associated with mental manipulation of elements in a spatial environment without that kind of reference (Miller and Johnson-Laird 1976: 378-380, 394-395; Fürst 1998: 63-64; see also Evans 2010; Kemmemer 2010). Moreover, as attested by experimental data, disembodiment, or adopting another person's spatial perspective by mentally

self-rotating into their body orientation, is mastered too due to the demands of social interaction (Tversky and Hard 2009; Kessler and Thomson 2010; Cavallo *et al.* 2016). The importance of colour in the brain's processing of information about a range of different spatial stimuli is highlighted in the study of Lafer-Sousa and Conway (2013). Other works investigate negative effects of stress on the perception of space (Paul *et al.* 2016).

Interestingly, communication about object recognition, location, direction and movement has also captured the attention of linguists, for it is what is reflected in language structure as part of human society and culture. As Landau and Jackendoff (1993: 217) put it, "(…) what sets humans apart from other species is our ability to express spatial experience through language." Urban (1939/2013: 186) also points out spatial relations underlying linguistic representations:

(...) our intellect is primarily fitted to deal with space and moves most easily in this medium. Thus language itself becomes spatialized, and in so far as reality is represented by language, reality tends to be spatialized.

Grammatical and lexical means, which some researchers explain by appealing to structural properties of language, constitute one type of analysis related to spatial-relational information. By way of illustration, consider how Lyons (1977) treats grammatical categories. According to the researcher, there is an obvious parallel between spatial and temporal deixis: *here* and *there* can be analysed as meaning *at this place* and *at that place*, respectively, so *now* and *then* can be studied as implying *at this time* and *at that time*. Moreover, the difference between past vs. non-past (i.e. future and present) is accounted for by appealing to the interdependence beween spatial and temporal remotedness from the deictic zero-point of the here-and-now (*ibid.*, p. 718-719). Aspectual distinctions, causatives, modals, transitivity, instrumental adverbs, possessive and existential constructions provide plenty of evidence to be of locative origin, too (*ibid*., p. 719-724). Other linguists also point out the spatially grounded nature of some linguistic expressions. For instance, Kwiatkowska (1997: 126) refers to Rudzka-Ostyn's research of a corpus of 700 sentences concerning speech events, which shows that as many as 653 constructions, i.e. 93% of the data, verbs constituting the majority, refer to the spatial domain. However, even more interesting discoveries are made in contrastive studies. In this respect, space resembles colour, another objectively measurable yet conceptually rich domain of semantic inquiry (Berlin and Kay 1969; Regier and Kay 2009). By way of illustration, there is a combination of some nouns and verbs in Korean and Japanese, or the obligatory morphology of nouns to express the categories of shape and size as well as a number of verbal roots marked for spatial

features of the nouns that serve as their subjects or objects in American Indian languages (Miller and Johnson-Laird 1976: 375-376; Talmy 1983: 15, 238-239; Regier 1995: 64-65; Tyler and Evans 2003: 234). On the other hand, Finnish and Lithuanian employ case marking to convey spatial-relational information (Tyler and Evans 2003: 234). The indigenous languages of Dagestan constitute a particularly interesting example in this respect, for they possess as many as 50 locative cases (Comrie and Polinski 1998).

By way of contrast, many languages do not possess such grammatical means on a par with the categories of tense, gender or case, but employ instead rich lexical resources to deal with space: 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, etc. (Miller and Johnson-Laird 1976: 376-378). Majid *et al.* (2004) focus on linguistic expressions specialized for different frames of reference, cf. *the fork is to the left of/beside the spoon* (English, Dutch, Japanese speakers) vs. *the fork is to the north of the spoon* (speakers of Guugu Yimithirr in Australia) vs. *the fork is uphill of the spoon* (speakers of Tzeltal in Mexico) vs. *the fork is at the nose of the spoon* (speakers of Mopan in Belize, and Totonac in Mexico). Mackenzie (1992: 256) distinguishes between entity-denoting nouns (e.g. *chicken*, *blanket*, *stone*, *John*) and place-denoting nouns (e.g. *lee*, *inside*, *place*, *area*, *Copenhagen*, *home*) (cf. entities vs. places in Jackendoff 1983: 51), and discusses the consequences of such classification for functional grammar. On the other hand, Haspelmath (2003) points out words that have very general referential power and involve the relative position of the speaker or the addressee, for instance, demonstratives like *this* and *that*, which are learnt very early by children.

Besides grammatical and lexical means, which are investigated from a structural perspective, there are also spatial-relational utterances accounted for by a more cognitive approach to language as one of the manifestations of human cognition, alongside other manifestations – behaviour, reasoning, etc. Some conceptual metaphors that structure our understanding of more abstract entities are but one example of how language is permeated with spatial relations. As Stachenfeld, a neuroscientist at the British artificial intelligence company DeepMind (Cepelewicz 2019b), said, “Our language is riddled with spatial metaphors for reasoning (...).” For instance, we tend to think of ideas as different entities in space (people, plants, products, commodities, resources, money, cutting instruments, light-sources, etc.),

while the mind is consequently conceptualized as a container for them, e.g. *have/bear/keep something in mind*, *throw it out of our mind*, or *close our mind to it*. Moreover, the mind as a container may come in different sizes, producing such expressions as *great*/*limited minds* or *broad-*/*narrow-minded people*. Also, as in a real spatial environment, we can *keep something at the back of our mind* or *in the inner-recesses* of it. Another example illustrating the spatial nature of human thought is the ubiquity of temporal expressions, the conceptualization of which is based on spatial relations, but not vice versa (cf. Engberg-Pedersen 1999; Evans 2003). For instance, events move along the timeline from the future into the past, as in *put the past behind us*, *bygone days*, *as far back as 1960*, *she never looked back*, etc., or from the past into the future, e.g. *propose theories ahead of time*, *look forward to the future*, *go past the deadline*, *only days to go before the President's visit*, *he is going bald* (Lakoff and Johnson 1980: 46-48).

In addition to ideas and time, Levinson (2003: 16) provides a long list of other abstract areas that are thought about in spatial terms: kinship (e.g. *close*/*distant kin*), social structure (e.g. *high*/*low status*), music (e.g. *high*/*low tones*), mathematics (e.g. *high*/*low numbers*, *narrow intervals*, *lower bounds*, *open*/*closed sets*), emotions (e.g. *high spirits*, *deep depression*), and many more (e.g. *broad learning*, *a wide circle of friends*, *the place for respect*) (see also Kwiatkowska 1997: 115-138). Thus, space is a fundamental ontological category, the influence of which is not limited to an isolated sphere of human experience. Rather, it universally lies "at the heart of all conceptualization" (Putz and Dirven 1996: xi; see also Talmy 1983; Gibbs 2014), which is in line with Casasanto and Boroditsky's (2003) nonlinguistic evidence from psychophysical experiments showing that we think about abstract ideas using more concrete and accessible spatial representations provided by the senses, primarily vision.

Among a growing body of research related to spatial information as embedded in linguistic structure there also exists a plethora of works on prepositions, or the so-called spatial grams (Svorou 1994). Despite being closed-class forms, they display the priority over open classes such as nouns and verbs which also express spatial relations: "Lexical elements do incorporate some of the same structural indications that grammatical elements express, but when the two are in association or in conflict within a sentence, it is generally always the grammatical elements' specifications of structure that are determinative" (Talmy 1988: 165; Svorou 1994). However, prepositions also seem to be famous for the "intricacy and seeming capriciousness of their behaviour" (Herskovits 1988: 27) and, therefore, pose many challenges. Consequently, the semantics of these items constitutes an

invariably topical area of research in the development of the theory of word meaning, not only contributing to lexicography, machine translation and language acquisition studies, but also facilitating the comprehension of relations among languages and cultures.

Below there is an overview of the most significant works illustrating different approaches to prepositional semantics. Much attention is devoted not only to the state of the art, or cognitive studies, in the framework of which the present research is carried out, but also to the classical trend of investigation, providing a unique insight into the meanings of prepositions despite sometimes debatable treatment of their synonymy and polysemy.

1.2 Main trends of research on prepositional semantics

1.2.1 Classical approach

Semantic studies of prepositions fall into two main types: classical (descriptive or structuralist) and modern (cognitive), reflecting a dictionary vs. encyclopaedic view of word meaning (Tyler and Evans 2003: 17; see also Zlatev 2007: 334-336). The first trend, investigating formal language structures as if they were autonomous, i.e. separated from any mental activity (Jakaitienė 1988, 2009; Cuyckens 1993: 67), deals with prepositions in relation to other words. On the basis of componential analysis, syntagmatic (linear) and paradigmatic (hierarchical) relations (the distinction is employed in Šeškauskienė 1995; see also Maljar and Seliverstova 1998) are taken into consideration.

1.2.1.1 Syntagmatic treatment

The syntagmatic approach (Jakaitienė 1988: 112-123, 2009: 61-71; Stefanowitsch and Gries 2003; Taylor 2017: 251-253), equating the semantics of a preposition with the context in which it occurs, is illustrated by a multitude of works of the classical 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 localized, i.e. ablative or adlative, and the relation to the front/back or top/bottom of the located area). Prefixed verbs of motion with prepositional phrases are also investigated. However, the authors' interest is not so much in a semantic analysis as in a thorough review of means to express spatial relations in modern Russian. Klebanowska (1971) also emphasizes the importance of context while

examining Polish prepositions of location. For instance, she gives three meanings of ***na*** ('on'): (1) the localized object remains in contact with the exterior surface of the localizer, as in ***na*** *stolie* '**on** the table'; (2) the localized object is located on the outer side, further from the support of the localizer, for instance, ***na*** *zewnątrz* 'outside'; (3) the localized object occupies part of the space defined by the localizer (a variant of ***w***, corresponding to the English ***in***), as in *jeździć* ***na*** *parkingu* 'go **to** the parking-lot'. Another linguist who applies the descriptive method is Lindkvist (1968, 1976). He collected a plethora of examples illustrating the usage of various English 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, for instance, ***about***, ***around*** and ***round***, are described cross-referentially, i.e. by means of other prepositions (Lindkvist 1976: 195).

Some Lithuanian scholars also focus on syntagmatic relations, giving preference to the classical approach to prepositional semantics. For instance, Jablonskis (discussed in Paulauskienė 2015: 78), who follows the tradition of structuralism, is the first to provide a theoretical foundation for further research in this field. He considers a preposition as an additional means of expressing more subtle relations between words: "[It] does not have any meaning (…) a verb requires either the case of a noun or the case of a noun with a preposition (…) a preposition is just a friend of a noun case." (*ibid.*)[1] The researcher distinguishes between primary and secondary prepositions, claiming that the former correlate with prefixes (e.g. ***apie*** 'about/round/around' vs. ***ap-***; ***į*** 'to' vs. ***į-***; ***iš*** 'out of' vs. ***iš-***; ***nuo*** 'away from' vs. ***nu-***; ***po*** 'under' vs. ***pa-***; ***prie*** 'by/beside/close to' vs. ***pri-***, etc.), whereas the latter are etymologically related to adverbs (cf. *Visi vaikai buvo* ***greta*** 'All the children were **nearby**' vs. *Jisai sėdėjo* ***greta*** *manęs* 'He was sitting **beside/next to** me'). Morevover, primary prepositions are monosemous, while secondary prepositions and prefixes are polysemous (for more ideas on the classification of prepositions in terms of their origin, see also Zinkevičius 1981: 185-186). Finally, Jablonskis (*ibid.*) suggests some rules of prepositional usage.

A prescriptive perspective is also strongly advocated by Šukys (1978, 1984, 1998), Pupkis (1980), Paulauskienė and Tarvydaitė (1986), Šukys and

[1] „(...) vienas prielinksnis nieko nereiškia, (...) veiksmažodis reikalauja linksnio arba linksnio su prielinksniu, (...) prielinksnis yra tiktai linksnio draugas (...)." Translated by the author of this dissertation.

Pupkis (2009), all claiming that a semantic analysis of Lithuanian prepositions and postpositions should be performed alongside research into the seven cases as "the meaning of the majority of prepositions is blurred"[2] (Šukys 1998: 20). By way of comparison, ***per***, as in ***per*** *kiemą* ('**across** the yard'), ***per*** *metus* ('**during** the year'), ***per*** *jėgą* ('**by** force'), may refer to location, time and manner, respectively, when used with the Accusative (*ibid*., p. 13-14, 20; see also Kilius 1974: 43-52). Lithuanian grammar books are also concerned with the prescriptive approach to prepositional usage. For instance, Ulvydas *et al.* (1976: 90-94) and Paulauskienė (1994: 384-396) discuss the functions of location, time, manner, reason and purpose when prepositions are used with the Genitive, Accusative and Instrumental cases of the noun. Ambrazas (1997: 527; 2006: 284-288) analyzes means of expressing locative, directional and path meanings (noun cases, prepositions, adverbs) and distinguishes several types of prepositions according to their usage (with nouns in the Genitive, Accusative and Ablative cases) and origin (primary and secondary prepositions). The attributes of the localizing object and the localizer are also referred to. For instance, ***ant*** ('on'), when it appears with the Genitive case of the noun denoting surfaces, manifests 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 localizing object refers to people or is expressed by a personal pronoun.

On the other hand, some researchers also pay attention to other languages in their syntagmatic analysis of Lithuanian prepositions. For instance, Otrębski (discussed in Paulauskienė 2015: 275) notices that Lithuanians use fewer prepositions than the Polish and prefer noun cases instead, cf. *knygos vaikams* book-NOM.PL child-DAT.PL 'książki **dla** dzieci' ('books **for** children/children's books'), *rašau tau laišką* write.PRS.1SG 2-DAT.SG letter-ACC.SG 'pisze **do** ciebie list' ('I am writing a letter **to** you/I am writing you a letter'), *jo sveikata eina geryn* 3-GEN.SG health-NOM.SG go.PRS.3SG good-ADV 'jego zdrowie ciągle idzie **ku** dobremu' ('his health is improving'), *negaliu prisiversti skaityti* NEG-manage-PRS.1SG RFL-make-INF read-INF 'nie mogę się zmusić **do** czytania' ('I can't make myself read'), *rašomoji mašinėlė* write-NOM.SG.F.DEF machine-DIM-NOM.SG 'maszyna **do** pisania' ('a typewriter/machine **for** typing'). Such examples may illustrate the more analytical character of the neighbours' language, as a noun case in Lithuanian frequently corresponds to a prepositional construction in Polish. In more recent syntagmatic treatments of

[2] „Prielinksnis vienas pats savo reikšmę irgi turi, tačiau daugelio prielinksnių ta reikšmė labai nekonkreti, neaiški." Translated by the author of this dissertation.

prepositional meaning, the relevance of establishing a clear relationship between a preposition and a noun case is emphasized. For instance, Paulauskienė (*ibid*., p. 375) pays attention to the Nominative and the Locative cases which cannot be used with Lithuanian prepositions, whereas the Locative case in Russian always requires a preposition. By way of contrast, Germanic and Romance languages, where prepositional constructions are fewer in number, correlate with noun cases in Lithuanian.

To summarize, syntagmatic studies of prepositional semantics focus on huge amounts of contextual data and, consequently, constitute useful reference works for native and non-native speakers. However, an attempt to disclose the meaning of a preposition by presenting a variety of contexts might be ambiguous, i.e. locative meaning cannot be separated from the semantic input of the context. As Bennett (1975: 9) puts it, "(...) giving specific contextualized senses is like defining a phoneme by listing its allophones". A more systematic trend in the classical analysis of spatial prepositions is overviewed below.

1.2.1.2 Paradigmatic treatment

In contrast to syntagmatic studies, the paradigmatic approach (Jakaitienė 1988: 102-112, 2009: 71-80; see also Ruhl 1989: 6; Taylor 2017: 249-251) defines the meaning of a preposition in terms of universal primitives, specifying necessary and sufficient conditions, generally restricted to substitutional or oppositional relationships (synonymy and antonymy) with competing prepositions. Such invariant meaning approach to polysemy, when all senses are related to a semantic core, is considered general enough to account for all the uses of an item. The context provides other aspects of meaning that do not belong to a preposition (Taylor 1988: 300-302; Croft and Cruse 2004: 76-77).

The application of the structuralist principle of markedness carried over from the study of phonology to the semantics of prepositions is extensively discussed by Cienki (1989: 6-11). Other researchers also analyze their 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 Dagestan languages, suggesting 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 uses the terms *subject* and *landmark* to refer to objects making up a spatial scene, and two dimensions – *dynamic* and *orientational meanings*. The first dimension shows how the subject moves,

whereas the second gives information on where the subject is situated with respect to the landmark (inside, outside, underneath). In his semantic analysis, the author also employs such terms as *motion* vs. *non-motion*, *linearity* vs. *non-linearity*, *interior* vs. *non-interior*, *exterior* vs. *non-exterior*, *proximity* vs. *distance*, *horizontality* vs. *verticality*, *top* vs. *bottom*. 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).

Kilius' follower Valiulytė (1998) also pays attention to the whole system of spatial, temporal and causal relations. The author explicates the difference between synonymous means of expressing the same types of relations, for instance, (1) a case vs. a prepositional phrase, as in *vaikšto kieme* vs. ***po*** *kiemą* ('walks **in** vs. **round** the yard'), when the case is stylistically marked, but the prepositional phrase is more frequent; (2) two prepositional phrases consisting of (a) two primary prepositions, e.g. *užkopė* ***į*** *kalną* vs. ***ant*** *kalno* ('he climbed **to** vs. **on** the hill'), (b) a primary preposition and a secondary preposition, e.g. *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'). 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 semantics based on paradigmatic relations, Miller (1985) introduces two universal categories: an entity (an object or abstraction in extra-linguistic reality) and a relator (a means of expressing various relationships between entities). Five types of entities are distinguished: (1) the (outer and inner) surface of objects, (2) the space adjacent to the surface, (3) the interior of objects, (4) the exterior of objects, and (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 (e.g. ***from***, ***of***, ***to***, ***at***) are called relators for they express spatial relationships rather than indicate surfaces or 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 Fillmore's (1968) deep cases (locative, source, path, goal and extent), corresponding to what is currently known as

semantic roles, and such concepts as *interior*, *exterior*, *superior*, *inferior*, *higher*, *lower*, *surface*, *side*, *proximity*, etc. For instance, the meaning of ***in*** is described as *locative + interior*, ***on*** *– locative + surface*, ***at*** *– locative*, ***through*** *– path + locative + interior*, ***under*** *– locative + inferior*. However, since the focus is 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 a variety of usage instances. As Navarro i Ferrando (2006: 168) points out, the meanings of some prepositions are reduced to such an extent that they do not fit the translation equivalence found in his translation corpus.

Thus, a preposition does not generate so much interest from linguists in the classical approach which examines their semantics in terms of syntagmatic and paradigmatic relations, i.e. with reference to a language system. Believing that any sign, including a word, becomes meaningful in relation to other signs rather than in isolation, structuralists consider a preposition as a mere syntactic marker or a set of oversimplified components, which can be simply reduced to an additional element of verbal meaning. Consequently, this approach runs into two serious problems. First, many cross-referential definitions (this principle of descriptive analysis is frequently employed in dictionaries) and partially true universal categories, which are suggested without verification by researchers investigating the paradigms, make it difficult to handle semantic disparity between synonymous spatial prepositions, for instance, ***near*** vs. ***close to***; ***about*** vs. ***around*** vs. ***round***; ***over*** vs. ***above***; in Lithuanian, ***po*** 'under' vs. ***žemiau*** 'below'; ***virš*** 'over' vs. ***aukščiau*** 'above' (for more criticism, see Boers and Demecheleer 1998; Lindstromberg 2001; Šeškauskienė 2001; Littlemore 2009; Šeškauskienė and Žilinskaitė-Šinkūnienė 2015). Second, because of ignoring relationships between numerous senses of a preposition, polysemous cases (e.g. *the ball* ***under*** *the table* vs. *to live* ***under*** *the Romans*) remain unaccounted for. That is why most supplementary books and reference grammars frequently have small sections on prepositions (sometimes accompanied by simple pictures or diagrams), the usage of which is usually presented as arbitrary and idiomatic: "There are not many rules to help you choose correctly (…) so you have to learn each expression separately" (Swan 1980: 483 quoted in Taylor 1988: 300; see also Lindstromberg 1996: 227; Yates 1999). However, the modern (cognitive) school of linguistics seems to handle the subtleties of prepositional semantics in a different manner, providing a more satisfactory treatment of the situations which proved problematic in the earlier studies.

1.2.2 Cognitive approach

The cognitive approach, which is systematically applied in the semantic analysis of prepositions in the works of Talmy (1983), Lakoff (1987), Langacker (1987) and many others, does not insist on autonomous modes of language, such as lexicon vs. syntax. Even more so, considering all units and structures meaningful, including grammar, it gives meaning "a central position in the architecture of grammar" (Geeraerts and Cuyckens 2007: 14). Consequently, we can witness "the ennoblement of the humble preposition" (Taylor 1993:151), illustrating "a fine-structural level" of language, as opposed to "the macroscopic expository level" of open-class elements (Talmy 1983: 227). Moreover, a preposition is believed to render "a skeletal conceptual microcosm" (Talmy 2000: 179), organizing the conceptual content, including that of nouns and verbs, which in turn facilitates the comprehension of the structure of thought and conception in general (Zelinsky-Wibbelt 1993: 1, 354; Lindstromberg 2001: 80-83). So, it is no wonder that the cognitive line of semantic inquiry hinges upon new methodological principles (for an extensive overview of the differences between classical and modern investigations, see Geeraerts 1988; Cuyckens 1993: 28-33). Many ideas come from compatible approaches outside cognitive linguistics, such as experimental psychology, anthropology and philosophy, the main tenets of which are defined below.

Types of conceptual structures. According to the proponents of cognitive studies, there exists a tight link between "environmental input and active principles in the mind that impose structure on that input" (Jackendoff 1983: 24). In other words, spatio-physical experience, or common sense physics/the naïve/canonical view of the world (Herskovits 1986: 2, 27; Cienki 1989: 42), affects the human conceptual system, i.e. processes concerned with thinking, imagination, etc. (cf. "first-order" vs. "second-order" world[3] in Taylor 2017: 256). The mental organization of our physical reality refers to extra-linguistic knowledge highlighted by researchers in the interpretation of prepositional meaning. As Langacker (2008: 42) points out, a preposition should invoke the language user's construal or conceptualization of the state of affairs, providing "paths of access… to open-ended domains of knowledge", rather than a fixed conceptual package

[3] The distinction between the two types of reality is mentioned as early as Kant (see Cienki 1989: 21), whereas *modi essendi* (various properties that objects possess as they exist in the world) and *modi intelligendi* (features of objects as apprehended by the mind) are already juxtaposed in the works of the medieval grammarians known as the modistae (*ibid.*).

based on truth conditions. Here is how the researcher raises doubts about intralinguistic relations advocated in the classical studies and promotes a new view of meaning (Langacker 2009: 224):

The meaning of a lexical item (…) is not revealingly described just by indicating the systematic relations it bears to others (…) At least as important – and arguably more fundamental – is the task of providing a positive characterization in terms of conceptual content and construal. Without a specification of content, a system of oppositions is just an empty shell.

Different kinds of extra-linguistic knowledge structures are advocated by cognitivists as a background for explicating prepositional meaning. All of them refer to large portions of the mental world, or the so-called imaginative versions of reality.

(1) Mental spaces. In cognitive linguistics, the opposition between the real and the projected is avoided by extending the term "space" to refer to an entity for situating objects, "a medium for conceptualization and thought" (Lakoff 1987: 281). This view is advocated in Fauconnier's (1985, 2007) theory of mental spaces, when any possible world or state of affairs as we conceptualize it for the purpose of local understanding and action is represented by a mental space (cf. domains in the conceptual metaphor theory). Examples include our immediate reality, hypothetical situations, fictitious versions of reality (e.g. paintings, movies, etc.), conceptions of the future, (un)known aspects of the past, the knowledge and experience of other conceptualizers, etc. The applicability of the term might be illustrated by the utterance ***in*** *my dream/his poem/the painting/the yard there was a rabbit.* According to Lakoff (1987: 543), the prepositional phrase shows the nature of the space, i.e. a dream, a poem, a painting and a portion of 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* expresses what kind of entity it is; the verb *be* marks a spatial relation designating that the entity is located in the space. Since mental spaces are set up dynamically throughout an ongoing discourse, Fauconnier (2007: 371) draws attention to space builders, i.e. grammatical expressions that open a new space or change focus to an existing space. According to the researcher, prepositional phrases are just one example of them, in addition to adverbials, subject-verb complexes and conjunctions + a clause.

(2) Frames. The organization of the elements of a mental space, when they come as a package that we know, is called a frame (Fauconnier 2007: 352). According to Petruck (1996), it characterizes a unified and idealized understanding of an area of experience that is necessary for the

comprehension of any concept (cf. frames with defaults in Minsky 1975; schema theory in Rumelhart 1975; scripts in Schank and Abelson 1977). Thus, the meaning of a preposition, which represents a category of experience, may also be defined in terms of such understandings and becomes crucial for the interpretation of any (longer) text. For instance, in the utterance *the children played **on** the bus*, ***on*** implies that some children were playing, while the bus was in operation as a means of transport. If the children were playing in an abandoned vehicle, only the expression *the children played **in** the bus* would be appropriate (Petruck 1996: 3-4). Thus, the notion of a frame, which can be traced to Fillmore's (1968) case grammar to emphasize the semantic roles of the arguments of predicates for the characterization of verbs and clauses, is extended to include the description of knowledge structures, linking linguistic analysis to the study of cognitive phenomena (Cienki 2007: 171-174; see also Sperber and Wilson 1986).

(3) Idealized cognitive models. There are several concepts from frame semantics used in the cognitive approach to prepositional meaning. One of them is a prototype as formulated by Wittgenstein (1953) on family resemblances (overlapping set models) and tested in Rosch's (1975, 1978) psychological experiments (see also Cienki 2007: 175-181). The idea of frames drawing on prototypes is called idealized cognitive models (ICMs), which refer to a way of organizing knowledge in the form of conceptual categories (Lakoff 1987; cf. experiential gestalt in Lakoff and Johnson 1980; base vs. profile in Langacker 1984). An image schema, "a cognitive representation comprising a generalization over perceived similarities among instances of usage" (Kemmer and Barlow 2000: xviii; see also Lakoff 1987: 267, 1988: 119-122), plays a major structuring role in ICMs. Its nature reflects the notion of embodiment, i.e. conceptual structure is determined by our bodily experiences in a spatial reality which are perceived mainly by means of the visual sense (Lakoff 1987: 267; cf. multimodal image schemas in Kreitzer 1997: 294). For instance, the basic distinction between ***in*** and ***out*** is defined by a container schema, which consists of a boundary distinguishing an interior from an exterior. However, an image schema might as well become involved in the construction of more complex concepts (e.g. animacy) and spatial relations (e.g. support). On the other hand, an image schema may also give structure to metaphorical reasoning to move from what we experience with our bodies in the domain of the concrete, more-observable to abstract, non-observable domains, such as time, state, manner/means, circumstance, or cause/reason. For instance, in the utterance *she finally came out of her depression*, the containment schema

is metaphorically projected onto emotional life. The same schema plays a major role in the semantic development of ***in*** along the "spatio-temporal-existential cline", from the most concrete spatial message ***in*** *the house* via the more abstract temporal utterance ***in*** *the evening* to the most abstract existential message ***in*** *love (*Kwiatkowska 1997: 117).

Dimensions of conceptualization. In addition to imagination, semantic studies of prepositions in a cognitive vein are also drawn on other features of our mental world, i.e. prominence, selection, perspective, and dynamicity, which all have analogues in visual perception.

(1) Selection. Schematization constitutes the central mechanism in the construction of our mental world. It involves choosing only certain aspects of a particular situation, which, according to conventional experience and/or from the language user's perspective, figure as essential to represent the whole (metonymy), while omitting the remaining countless features (Talmy 1983: 225; see also the principle of *salience* in Herskovits 1988: 273). By way of comparison, specificity refers to the degree of precision and detail at which a situation is described; other terms are *resolution*, *granularity*, and *visual acuity* (cf. *coarse-grained* vs. *fine-grained* conceptions in Langacker 1988). However, by means of schematization, which relies predominantly on geometric and topological properties, it is easy to refer to an indefinitely large number of seemingly disparate objects and relations with a small set of prepositions.

Talmy (1983) distinguishes the following types of schematization driven by such cognitive principles as salience, typicality, tolerance and relevance (Herskovits 1982 quoted in Cienki 1989: 284-290; see also Herskovits 1986: 73ff). Idealization, which is the first kind of schematization, refers to the process by which objects lose some of their features, rendering conceptually ideal models. For instance, in the utterances *an ant crawled* ***along*** *the pencil*, *the snake slithered down* ***along*** *the performer* and *the outside elevator rose* ***along*** *the skyscraper*, a pencil, a person and a skyscraper, regardless of their dimensions, are conceptualized as lines (Talmy 1983: 259). Another case of idealization might be exemplified by the utterance *the fruit* ***in*** *the bowl*. The bowl is conceived as a complete enclosure, whereas in reality it is partially bounded, so some of the fruit may be hanging over its edge (Zelinsky-Wibbelt 1993: 368). However, ***in*** can be used both when the fruit is in the bowl and on top of other fruit, i.e. outside the bowl (see the principle of *tolerance* in Herskovits 1988: 273). On the other hand, a ball thrown across from one person to another between the legs of a table is said to be thrown ***under*** *the table*. In this utterance, only the top of the table is important. However, linguo-cultural factors may also play a huge role in the process of

choosing from among the potential alternatives of schematization. By way of illustration, in Atsugewi, which is spoken by Native Americans in the United States, the same ball would be said to be thrown ***through*** *the table* (Langacker 1987: 267-268).

While idealization involves matching a spatial entity to a particular schema, abstraction, which is a complementary process, entails ignoring some properties of the object. According to Talmy (1983: 261), in the use of ***across***, it is irrelevant whether the object has side boundaries or not, cf: ***across*** *the river*, ***across*** *the tennis court*, ***across*** *the lake*, etc. Moreover, it is not important whether it is a liquid layer or a solid surface.

Topology, which constitutes the last type of schematization, entails further abstraction in a sense that prepositions do not refer to metric distances, angles, sizes or shapes. The following examples illustrate abstraction from the magnitude of the room and the city: *the man* ***in*** *the room*, *the office* ***in*** *the city*. Irrelevance of shape is emphasized in the utterances ***through*** *the water*, ***through*** *the timber*, ***through*** *the woods*. According to Talmy (1983: 262, 273-274), distinctions of metric spaces are indicated in languages by full lexical elements, e.g. *square*, *straight*, *equal*, etc.; numerals are also employed. Furthermore, linguistic topology allows imagining a spatial configuration in more than one way, which Talmy (*ibid*., p. 269-271) refers to as a disjunct character (cf. Tyler and Evans 2003: 53-54). In other words, it is up to the speaker which schematization to choose since every language makes available not one, but many schemas, all manifesting disparate arrangements of objects within the same conceptual domain. For instance, the utterances *the cloth* ***on*** *the table* or *the cloth* ***over*** *the table* are both grammatically correct, but emphasis is laid on either the relation of support between the two objects, or that of covering. In the analysis of Croatian, Šarić (2008: 272) also highlights a possibility of choosing between two spatial prepositions ***na*** 'on' and ***u*** 'in' when locating objects in the world: conceiving of it as a surface on which a variety of things are displayed, or a container in which objects are surrounded, hence ***na*** *svijetu* and ***u*** *svijetu* 'in the world'. However, according to Talmy (1983: 266), "the determiners of, and the degree of consciousness involved in the selection awaits investigation."

(2) Prominence. In their study of prepositions, cognitivists introduce two semantic primitives to indicate the disposition of one portion of a spatial scene as we conceptualize it in terms of another (Talmy 1983: 230-231). They both involve the asymmetrical focusing/distribution of attention, i.e. in vision, one object is rendered more prominent and apprehended with greater acuity within the immediate field of view; however, their use varies across

works within the framework. For instance, Hawkins (1984), Langacker (1987), Lakoff (1987), Taylor (1993, 1995), Kreitzer (1997), Navarro i Ferrando (2006) employ the terms *trajector* (TR), or a primary focal participant, i.e. the object located, typically smaller and movable, which the expression serves to locate, assess, or somehow describe, and *landmark* (LM), indicating a secondary focal participant, or the object with respect to which the trajector is located, typically larger and immovable, i.e. perceptually more salient. The distinction roughly corresponds to what Miller and Johnson-Laird (1976) call *referent* (REF) and *relatum* (REL), or Wesche's (1986/87) and Herskovits' (1986) notions of *located object* (LO) and *reference object* (RO). However, *figure* (F) and *ground* (G), as suggested in the works of Talmy (1983, 2000), Coventry *et al.* (2001) and Levinson (2003), seem to be the most common and refer to the language user's point of view towards a spatial scene: mental foregrounding vs. some presupposed background, or the "new" vs. "given" part of information, both illustrating an old idea of Gestalt psychology (Evans 2010: 31-36). The distinction and characterization of the F/TR and G/LM notions is akin to semantic roles in Fillmore's (1968) case grammar and comes from such discourse evidence as: *Where is the lamp? The lamp* (F/TR) *is* ***above*** *the table* (G/LM). *Where is the table? The table* (F/TR) *is* ***below*** *the lamp* (G/LM).

According to Zlatev (2007: 327), TR may be static (e.g. *she is* ***at*** *school*) or dynamic (e.g. *she went* ***to*** *school*), a person, an object (e.g. *the book is* ***on*** *the table*), or the whole event or process (e.g. *she is playing* ***in*** *the room*). F/LO/REF, on the contrary, usually applies to object-like entities and not events. As to LM/REL/RO/G, it may refer to a thing (e.g. *the book is* ***on*** *the table*) or a place (e.g. *take the book* ***from*** *under the table*). However, even though such role assignments fore each object might seem handy for semantic descriptions at first sight, they are not always justifiable. For instance, does "yard" constitute a thing or a place? Furthermore, views also differ on whether LM/REL/RO/G always entails a spatial relation, e.g. *Come here!* (cf. Langacker 1987; Jackendoff 1990).

The term *region* refers to a configuration of space in relation to LM/REL/RO/G. According to Miller and Johnson-Laird (1976: 59), it is "a rather indeterminate penumbra" around a person or a thing, whereas Svorou (1994: 15) defines it as "our knowledge about physical, perceptual, interactional, and functional attributes of entities". Thus, a region, when generalized from people to inanimate objects, depends not only on the perceiver's ability to recognize the geometric properties of LM/REL/RO/G (Talmy 1983; Herskovits 1988; Hawkins 1988; cf. *geometrical region* in

Šeškauskienė 2003, 2007), but also on his familiarity with the functional characteristics of this entity (Vandeloise 1991, 1994; Maljar and Seliverstova 1998; Garrod *et al.* 1999; cf. *regional/qualitative space* in Šeškauskienė 2003, 2007). Interestingly, the extralinguistic knowledge of the two spatially aligned objects is also noteworthy to avoid possible F-G reversals, e.g. *a stone* ***behind*** *the house* vs. **the house* ***behind*** *the stone*, *the bench* ***under*** *the tree* vs. **the tree* ***above*** *the bench*, *the cap* ***on*** *the cognac bottle* vs. **the cognac bottle* ***under*** *the cap*, or *the children are riding* ***on*** *the bus* vs. **the bus is riding* ***under*** *the children* (for asymmetric referencing roles, see Talmy 1983: 231; Vandeloise 1991: 11; cf. the principle of *typicality* in Zelinsky-Wibbelt 1993: 370). By way of comparison, Langacker (1993) gives conceptual priority to *a search domain*, whereas Boers (1996) and Talmy (2000) use *area* and *conformation*, respectively, whereas Jackendoff (1983, 1990) introduces the semantic primitive *place* for the notion of a region.

(3) Perspective. The viewing arrangement for the process of conceptualization is also crucial for prepositional meaning and involves the following parameters so as to give the right impression of the objects in a spatial relation. The vantage point refers to the location of the viewer, the place from which a situation is apprehended. As to the frame of reference (FoR), which entails reference points and a coordinate system of axes and angles, it may fall into three types (Coventry *et al.* 2001: 379; Zlatev 2007: 328-330). For instance, the intrinsic FoR (object-centered) involves the coincidence of the main reference point and the salient features of the LM/REL/RO/G, while axes and angles are projected on the basis of its geometry. Thus, in the utterance *the car is* ***behind*** *the house*, the car is located in relation to the opposite wall from where the salient front of the house is, which is where the back door is. However, the relative (viewer-centered/deictic) use of the same expression would locate the car behind the opposite wall to the wall where the speaker and hearer are standing. Finally, the absolute FoR (environment-centered/extrinsic) involves fixed geo-cardinal positions, e.g. *the North of the border* (see also Miller and Johnson-Laird 1976: 396-397; Coventry and Garrod 2004: 1940; Kessler and Thomson 2010: 73). When none of the three frames of reference is employed, spatial relations are topological or geometric indicating that the the entities are contiguous or in close vicinity with each other (Levinson and Wilkins 2006).

(4) Dynamicity. Johnson (1987) points out approximately 30 image schemas, from which path, direction, motion and force dynamics are the most frequently employed in the cognitive analysis of prepositional

meaning. A path refers to the trajectory of a moving entity with respect to the other object (Talmy 1983; Lakoff 1987; cf. vector in Talmy 2000). For instance, the meaning of ***over*** entails a semicircular type of path with an arched arrow partially enclosing a rectangle (Dewell 1994: 355). In most semantic analyses, the notion also involves direction, cf. *the bird flew **toward** its nest* (an imperfective path) vs. *a jogger ran **round** (and **round**) the block* (an iterative path) vs. *the bird flew **to** its nest* (a perfective path) (Hawkins 1984; Taylor 1993). According to Zlatev (2007: 331-332), paths are made of three components: the beginning of a path, or source, trajectory or medium, and the end of the path, or goal), all of which figure in the meaning of some prepositions, e.g. ***into***: *end + interior*; ***out of***: *beginning + interior*; ***through***: *middle + interior* (see also Talmy 2000: 265).

As regards motion, it falls into two types: actual, as in the utterance *the snake is winding **through** the grass*, and imagined, as in the expression *the road is winding **through** the hills*. While the former entails physical motion by an onstage mover, in the latter case it is replaced by mentally scanning along the path by an offstage viewer, which represents a kind of disengagement, because the scanning involved is inherent in the conception of actual motion but occurs independently of it and is expressed by a verb of motion or a preposition designating the movement of some object which is not literally capable of movement in the physical world, e.g. *the scenery rushed **past** us*, *I looked **toward** the valley* (Zlatev 2007: 333) This type of motion is also called "summary scanning" (Langacker 1987), "abstract/subjective motion" (Langacker 1987), a "potential path" (Taylor 1993a), or "fictive motion" (Talmy 1996, 2000; Langacker 2006), as opposed to a "freeze-framing" phenomenon (Talmy 1983; Dewell 1994), as in the utterance *his office is **through** the corridor*.

As to force dynamics in the semantics of prepositions, it is mainly discussed in Talmy (1983: 253-257, 2000: 12; see also Mulder 2007). The notion refers to the way in which spatially aligned objects interrelate with respect to the exertion of and resistance to force (see Agonist → Antagonist in Talmy 2000: 413), cf. *he leant **against** the wall* (an external force toward movement) vs. *the stars shine **against** the dark sky* (no external force). According to the researcher, prepositions may obtain their meaning by referring to the direction of the Agonist's tendencies, as illustrated by four force-dynamic patterns: (1) *The shed kept standing **despite** the gale wind blowing against it* (the Agonist's tendency toward rest is stronger than the force opposing it, so the Agonist remains in place); (2) *The ball kept rolling **despite** the stiff grass* (the Agonist's inherent tendency toward motion is opposed by the Antagonist, but the Agonist is the stronger entity). There are

also cases of extended causation, where the Antagonist continuously impinges on the Agonist: (3) *The ball kept rolling* ***because of*** *the wind blowing on it* (the Agonist's intrinsic tendency toward rest is overcome by a stronger Antagonist, which forces it to move); and (4) *The log kept lying on the inuline* ***because of*** *the ringe there* (the Agonist has a tendency toward motion, but the Antagonist is stronger) (Talmy 2000: 415-416). For an overview of force dynamics in the semantic structure of prepositions in French, Norwegian, Dutch, German, see Mulder (2007: 296-297).

Levels of schematization. According to Talmy (1983: 258) and Kreitzer (1997: 293-294, 301-308), prepositional meaning can be investigated at three layers: (1) the component level; (2) the relational level; (3) the integrative level. At the first level, which is the simplest, reference is made to the geometrically schematic components of mental construals, i.e. points, surfaces, lines, etc., allowing for an image schema to apply to a wide variety of objects and relations (cf. idealization). For instance, the support and contact schemas, realized by ***on***, are schematized as points of a mass in contact with a surface.

The second level focuses on the relation between the components. The prototype for ***over*** requires motion and a trajectory traversing the boundaries of the locating entity. This means that contact with it is irrelevant at the component or relational level of schematization. We are also confronted here with situations when a language user chooses a more appropriate means of expressing spatial relations in order to meet communicative purposes (see the principle of relevance in Herskovits 1988: 273). According to Kreitzer (1997: 301-302), "this is a common and necessary aspect of language whereby the complexity and uniqueness of our surroundings are schematized and related within the framework of a finite class of prepositions." For instance, the expression *the dust* ***in*** *the bowl*, foregrounds location inside some object, whereas in the example *dust* ***on*** *the bowl*, contact becomes important. In the utterance *the book* ***on*** *the table*, the support relation when the point is in contact with the surface is relevant, while in the prepositional phrase *the cloth is* ***over*** *the table*, the cloth is conceptualized as a planar entity and so is the table. Although both of them touch each other, support becomes backgrounded due to the emphasis on covering. Interestingly, the same properties of contact and support or contact and cover also apply to the following superficially different contexts: *the chair* ***on*** *the deck*, *the plane* ***on*** *the ground* and *the fog* ***over*** *the forest*. The utterance *Lucy* ***at/in*** *the playground*, in which ***at*** implies the construal of a spatial situation from far away from the speaker, while ***in*** presupposes proximity, illustrates another example of properties pertaining to the behaviour of individual schemas.

Interestingly, rather than being objectively measurable, actual distances in semantic descriptions become fuzzy and are determined by the nature of the objects in a spatial relation, cf. the validity of the utterances *the car* ***near*** *the gate* vs. *the house* ***near*** *Oxford* vs. *Oxford* ***near*** *London*, and the oddity of the following sentences when the objects come from spatial domains that are far away in their hierarchy: **the table* ***near*** *Oxford* or **the ashtray* ***near*** *the town hall* (Miller and Johnson-Laird 1976: 392).

The third level of schematization is concerned with the relationships between individual schemas or within larger system of schema usage. For instance, in the utterance *the city clouded* ***over***, the path schema intergrates with a static covering schema, but the latter is not a part of the path schema at the relational level, for the construed relation is not dynamic, hence no end-point transformation. In the following instances **I walked* ***over*** *the field* vs. *I walked over the field to reach the house*, the inapplicability of the first example is explained by ***over*** implying the conceptualization of the person as a moving entity, whereas the field as an obstacle against which we exert energy to cross it. However, the condition of force dynamics is satisfied only in the second case, in which the field is conceptualized as an entity to be crossed by the first mobile object to reach the house.

Language-specific and universal patterns of conceptualization. "Cognitive grammar equates meaning with conceptualization" (Langacker 1987: 5), so the structuring of space related to the experience we gain from our physical functioning in the environment is used to explicate the meaning of prepositions. The intricacies of their semantics are particularly evident in contrastive studies because "(…) [such] structure is not universal; it is language-specific to a considerable degree" (Langacker 1987: 2; see also Whorf 1939/2000; Gumperz and Levinson 1996; Levinson 1996; 2003). For instance, in the expression *the bird* ***in*** *the tree*, the tree is conceptualized as a three-dimensional container, while in the utterance *ptička* ***na*** *dereve* (Russian), it is the function of support, not 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 – a three-dimensional container, a bus – a two-dimensional surface), while in German – ***im*** *Auto* vs. ***im*** *Bus* (both cars and buses are conceptualized as three-dimensional containers) (Talmy 1983: 267; Zelinsky-Wibbelt 1993: 375). The Lithuanian expression *namas* ***prie*** *upės* house.NOM.SG **at** river.GEN.SG 'a house **at** the river' also constitutes an interesting example, as a house and a river are mentally construed as a point in proximity with a line, whereas in English, it is a point on a line that would be the most appropriate conceptualization. Interestingly, alternate ways of portraying the same situation might as well

be manifest among bilingual speakers. For instance, being Muslim, Nigerians prefer an eastern direction towards Mecca; however, they are also aware of the face-to-face norm of social interaction in western societies. Consequently, both cognitive strategies are reflected in the use of ***front*** and ***back*** to describe the relation of two entities in space in their indigenous languages and French (Hill 1975).

However, even though cross-linguistic disparities of space conceptualization are unavoidable, many prepositions might as well illustrate universal linguistic patterns. For instance, on the basis of neurobiological and psychophysical evidence concerning the human visual system, Regier (1995) proposes a cognitive model for the acquisition of prepositions that refer to three-part motion-based events (cf. source, path and destination in Lakoff 1987) in languages with widely varying spatial systems (English, German, Bengali, Russian and Mixtec). The process of learning takes place in the absence of explicit negative evidence, which is the same as the principle of mutual exclusivity (for more information, see Markman 1987). So, every positive instance for a preposition is an implicit negative instance for all others being learnt. For instance, ***in*** is taken as an implicit negative example of ***above***, ***below***, ***outside***, ***through***, etc. Also, the model predicts the manner in which motion is encoded in such prepositions. For instance, it learns to categorize on the basis of those spatial features which occur at the end of some event it has seen. Thus, ***through*** implies the existence of ***in*** or ***into***, as the model predicts that ***through*** would be unlearnable otherwise.

The above-mentioned principles of cognitive research on locative meaning are illustrated in Talmy's (1983) and Zlatev's (2007) studies, dealing mainly with the semantics of English prepositions. What follows below is an overview of the different frameworks within the cognitive approach, shedding light on the most important works on one or several senses of selected prepositions in one language and/or cross-linguistically. The preponderance of studies relating to English, German, French or Dutch is in fact a reflection of the sparsity of material published on other languages, such as Lithuanian and other inflecting languages.

1.2.2.1 Geometric aspects

Geometric descriptions used in the semantic analysis of prepositions refer to the topological properties of spatially aligned objects, for instance, their structural conformation, degree of subdivision, number of dimensions, boundary conditions, and symmetry vs. distinguishability of parts, rather than features specific to metric spaces, i.e. size, length, distance, shape and

angle, as well as other characteristics, such as texture, material or identity. For instance, Herskovits (1988: 282-284), whose study is a frequently cited geometric description of space, attempts to account for the meaning of a preposition and cases of its usage by means of geometric projections of spatially aligned objects, such as points, lines, surfaces, boundaries, volumes, etc. According to the researcher, in the utterance *the cloud cover* ***at*** *3000 feet*, the clouds are idealized as a horizontal surface, whereas in the prepositional phrase *the crack* ***in*** *the surface*, the surface is a thin three-dimensional lamina rather than a two-dimensional surface. Morevoer, Herskovits (1982 quoted in Cienki 1989: 12) claims that the ideal meaning "bends and gives", i.e. some variations are allowed as different use types for each preposition. The researcher presents use types or shifts from the ideal meaning, corresponding to different senses and motivated by four pragmatic principles: salience, relevance, tolerance and typicality (ibid., p. 284-290).

Cooper (1968), Leech (1969) and Clark (1973) also privilege dimensionality in the semantic structure of English prepositions. For instance, ***at***, ***on*** and ***in*** are considered as one-, two-and three-dimensional, respectively. Furthermore, three-dimensional prepositions are more complex than two-dimensional prepositions, which in turn are more complicated than one-dimensional prepositions. On the basis of this observation, a conclusion concerning language acquisition is drawn and a prediction is suggested that ***at***, which is associated with one dimension, will be acquired before ***on***, linked to two-dimensional objects, itself learnt before ***in***, which is more complex since it depends on three dimensions. However, although it is later shown that these prepositions are acquired in the opposite order, at least as far as their concrete usage is concerned (Clark 1974), these works deserve to be mentioned for the strong association established between dimensionality and the perception and conceptualization of space.

Talmy (1983: 236-258) gives an extensive overview of the range of geometries associated with spatially aligned entities to discuss prepositional meaning. For instance, he surveys the following types of F: (1) a point on a linear path, e.g. *the ball rolled…*; (2) a line in co-axial motion, e.g. *the trickle flowed…*; (3) a line in co-axial location, e.g. *the snake lay* ***across*** *the railway bed*; (4) a planar surface touching a planar G, e.g. *the tablecloth lay* ***over*** *the table*; (5) a distributed quantity, e.g. *there was milk all* ***along*** *the ledge*; *there were droplets of milk all* ***over*** *the table* (*ibid*., p. 237). As to G, it can be conceptualized as: (1) a point, e.g. *the bike stood* ***near*** *the boulder*; (2) a medium (anything from a composite entity to a continuous mass), e.g. *the tuna swam* ***through*** *the minnows/the seaweed/the polluted water*; (3) a bounded plane, e.g. *the bike sped* ***across*** *the field*. While the preceding

geometries entail the same structure of G, Talmy (1983: 240-244) also distinguishes a group of biased G geometries, i.e. when G has some form of asymmetry, either distinct parts or non-reversible directedness. For instance, in the utterance *the mosaic is **on** the front of the church*, F is in contact with the part singled out from G. In the expression *the bike is **in front of** the church*, the preposition indicates the portion of space adjacent to G, and localizes F within that region, whereas in the utterance *the bike is **to the right of** the church*, the adjacency condition is removed. As to biasing in directedness, it is manifest in such expressions as *John moved **ahead** in the line*, when emphasis is laid on the front-to-back directedness of a queue, or ***toward** the front of the line*, when the preposition refers to parts-biasing. However, characterizing location by more than one G is also drawn attention to. Talmy (1983: 245-251) distinguishes two types of secondary G: (1) encompassive, e.g. *John is **ahead of** Mary*; and (2) external, e.g. *the bike is **on the side of** the church toward the cemetery* or the *the bike is **toward** the cemetery from the church*. More examples illustrating the characterization of spatial conceptualization in terms of metonymy-based geometric parameters are provided in Dirven (1993: 74).

Mikulskas (2009) draws attention to geometric parameters which may change the existing semantic descriptions of prepositions in dictionaries of Lithuanian. For instance, DCLL describes ***skersai*** 'across' as "indicating a place" in such utterances as *Jonas guli **skersai** lovos* John.NOM.SG lie.PRS.3SG across bed.GEN.SG 'John is lying across the bed' or ***Skersai** kelią lapė perbėgo* **Across** street.ACC.SG fox.NOM.SG.F run.PST.3SG 'A fox crossed the street'. According to the researcher, cognitivists would improve the prepositional entry, adding that F must be conceptualized as a linear object, whereas G is always construed as a rectangular surface in the first example, hence the oddity of the following sentence: **Knyga/obuolys guli **skersai** lovos* Book/apple.NOM.SG lie.PRS.3SG **across** bed.GEN.SG 'A book is lying **across** the bed'. It is also highlighted that examples with verbs of motion, as in the expression about a fox running across the street, should be treated separately, when F is reduced to a point during the process of conceptualization, while G is prototypically perceived as a line.

Thus, studies which rely on geometric parameters to account for prepositional semantics seem to be very similar to the traditional approach in postulating the so-called ideal meaning, independent of context and perceiver/conceptualizer (cf. Bennett 1975: *locative + inferior = **under***, e.g. *the ball **under** the table*). However, geometric descriptions do not always exhaust the meaning of a spatial preposition. For instance, Navarro i Ferrando (2006: 168-171) draws attention to the fact that the semantics of ***at***,

on and ***in***, which express positional, static or topological relations, cannot be always explicated by relying on one-, two-, and thee-dimensions, respectively, and provides the following counter-examples to support his claim: a) *(...) C' obviously meets any line f* ***in*** *a single point*; b) *Ignorance* ***on*** *this point has caused a great deal of needless anxiety*; c) *Now if one hydrogen atom were placed* ***at*** *the surface of a large sphere of hydrogen atoms (...)*; d) *There was something* ***in*** *the surface for the bowlers throughout the day (...)*; e) *(...) the Bank of England disappointed traders and pitched the next auction on February 22,* ***at*** *the ten-year area*; f) (...) *two other men stood* ***on*** *a gray cement area next to the pool on my left* (see also Vandeloise 1991: 5, 1994: 161). On the other hand, even though 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*** (for more ideas on intrinsic and contextual orientation as well as inherently and canonically oriented objects, see Langacker 1987: 123; Lang 1989: 277; Vandeloise 1991), there are cases when other factors come into play. For instance, in the expression *I am* ***in front of*** *the post office*, the front of the building coincides with the main entrance, which entails the relevance of functional, or extrageometric, relations for defining the locative meaning. Furthermore, geometric aspects of space are not very appropriate for the analysis of prepositional polysemy, e.g. *be* ***under*** *impression/illusion*, as well as for investigating synonymous cases: *the ball* ***under***/******below*** *the table* or ***below***/******under*** *zero*.

1.2.2.2 Functional aspects

The Euclidean conception of space, focusing on geometric and topological characteristics, provides one type of model for concrete meanings of prepositions. However, when spatial relations are described with reference to interactions between objects or between objects and the perceiver/conceptualizer in extralinguistic reality, it constitutes another trend of semantic investigation. 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 nearness in place and some kind of activity; in the expression *the man* ***at*** *the piano*, ***at*** refers to playing the piano in addition to close proximity to it; in the utterance *to hold the umbrella* ***over*** *the man*, protection from rain is no less important to comprehend the expression than the position of the umbrella (Herskovits 1988: 278; Vandeloise 1991: 11-12; Coventry *et al*. 2001: 377). In other words, there is certain intentionality of F with respect to G in order to use,

manipulate, or affect it as expected under normal circumstances in the situation expressed by the phrase.

The role of functional relations as conceptual tools underpinning the use and comprehension of prepositions has been the subject of extensive linguistic analyses. For instance, such descriptions are strongly advocated by Vandeloise (1991, 1994). While examining the meaning of the French ***sur*** ('on'), he refers to support (a bearer/burden relation), one of the core functional relations, from which the geometric conception of the preposition is deduced. According to the researcher, localising objects with this function are frequently conceptualized as two-dimensional surfaces. Garrod *et al.* (1999) also succumb to the appeal of functional parameters, distinguishing several types of interaction, including support, especially in the analysis of concrete and abstract meanings of the English ***on*** (e.g. *the painting **on** the wall*, *the light **on** the ceiling* vs. *be **on** social security*/*the bottle*).

As far as containment, another functional tool, is concerned, it is typically described as one of the most important and earliest conceptual primitives in the system of spatial cognition (Mandler 2010). For instance, according to Mandler (1992), when breathing or moving from one room to another, people generate the bodily schema of containment. Thus, it is suitable for revealing the semantic structure of the French ***dans*** and its primary translation equivalent to English ***in***. Vandeloise (1994: 161) explicates the importance attached to the concept by the fact that a child who is learning a language always opts for this preposition even when a localizing object does not possess three dimensions, cf. *the jewels **in** the box* vs. *the cow **in** the field* vs. *the priest **in** line* (Vandeloise 1991: 6). The concept of localization is also 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*. According to the researcher, the traits describing the relationship of the container/contained are as follows: (1) the contained object moves toward the container, as in the utterance *put your finger **into** the ring*; (2) the container controls the position of the contained object, e.g. *the bulb is **in** the socket*, which can be manifest in two different ways: (a) a movement of the container triggers a similar movement of the content, e.g. *water **in** the glass*; (b) the container limits the movements of the content and prevents external entities from having access to it, e.g. *a prisoner **in** a cell*; and finally (3) the contained object is included, at least partially, in the container or in the convex closure of its containing part, as in the utterance *the pear is **in** the bowl* (Vandeloise 1994: 175-180; see also Evans and Tyler 2004: 11-12; Navarro i Ferrando 2006: 175). In their research of spatial relations in Baltic languages, Žilinskaitė-Šinkūnienė *et al.*

(2019a, 2019b) claim that containment, as opposed to support, might be in most situations derived from other factors, for instance, convexity, locational control and support.

In addition to support, containment and localization, other concepts have also received cognitivists' attention. For instance, Vandeloise (1994: 173-180) claims that in the utterance *the bulb **in** the socket*, the socket is not only a container, but also keeps the bulb in place, hence the importance of dynamic interaction. As to the projective prepositions ***into***, ***out of*** and ***from***, their semantic structure entails not only containment but also mobility (Zelinsky-Wibbelt 1993: 7). In other descriptions of functional relations, Vandeloise refers to physical accessibility and accessibility to perception that enable one to deal with the usage of some prepositions, as in the expression *a safe **under/behind** a map* (1994: 14-16). One more concept, potential encounter (e.g. *the priest is going **to** Rome*) may also illustrate the use made of space. However, although it implies movement, the inverse is not true (cf. *the priest goes*), which illustrates the additional element of meaning that the preposition gives to the verb *(ibid*., p. 16-20).

Besides Maljar and Seliverstova (1998), Garrod *et al.* (1999) and Vandeloise (1991, 1994), Tyler and Evans (2003), there are also other researchers who refer to functional aspects to unveil the semantics of prepositions. For instance, Kaufmann (1993) defines the meaning of the German ***durch*** ('through') by means of concepts of inclusion and path. Evans and Tyler (2004) continue the tradition by examining the English ***to*** and ***through*** and claim that path, goal, motion, trajectory and orientation do not necessarily derive from the prepositions. According to the researchers, sentential context, or the so-called "distributed" semantics, plays a significant role, too, so while ***to*** codes for orientation and goal, motion, which often arises in sentences with ***through***, is due to the influence of motion verbs, and, therefore, the preposition denotes a path, but not a goal, orientation or motion. Rhee (2002) distinguishes several senses of ***against***: the "toward" sense focuses on an entity moving along a path, the "opposed" sense entails a countering force moving in the opposite direction from a moving entity, while the "near" sense is the result of our ability to conceptualize a spatial scene from afar, when it is reduced to a small dimension with no visible path.

Functional aspects are also taken into consideration in works on prepositional meaning by Lithuanian authors. For instance, in Šeškauskienė's (1995) dissertation, geometric parameters do not always exhaust the semantics of ***about***, ***round***, ***around*** and their translation equivalents to Lithuanian ***aplink***, ***apie***, e.g. in the utterances *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), two ontological categories, gravitation and support, are better at explicating the meaning of the preposition (Šeškauskienė 1995: 9). In another work, the researcher examines the relevance of path, partition, obstacle, protection or shelter, in addition to proximity or contact, for the semantic structure of ***behind***, ***beyond*** and their rough Lithuanian counterparts ***už***, ***anapus*** (Šeškauskienė 2001). Stasiūnaitė and Šeškauskienė (2004) give preference to support, not contact (contiguity), in the analysis of the Lithuanian ***ant*** and its primary translation equivalent to English ***on***. However, according to the authors, the support domain is very diverse since it also includes vertical support, adhesion, hanging, attachment (e.g. attachment by piercing and by cord), etc.

Thus, geometry alone cannot account for spatial perception and language. However, the question is as to what extent geometry and/or function are determining. According to Landau (2017), prepositions may manifest the impact of both geometry and function. For instance, the English ***in*** and ***on***, which are defined in terms of geometric concepts, entail force-dynamic relations between the objects in spatial scenes. Žilinskaitė-Šinkūnienė *et al.* (2019a, 2019b) deal with the spatial relations of containment and support in a geometric framework from Lithuanian and Latvian. Zwarts (2017), whose paper gives an overview of both lines of research, also argues that a synthesis is possible between the studies of based on geometric information and functional features, the latter of which is described as dynamic kinematic routines made up of our knowledge of the objects and their typical spatial interactions (Coventry and Garrod 2004: 55). Garrod *et al.* (1999) in their experimental study show that the less prototypical geometric relations, the more functional information, and *vice versa*.

1.2.2.3 Motivated polysemy

The geometric and functional descriptions of prepositional meaning, as discussed so far, focus on various ways of segmenting physical space in extra-linguistic reality. However, these studies, especially at the onset of cognitive linguistics, mainly deal with separate senses. Other researchers, on the other hand, succumb to the idea of motivated polysemy. They introduce a radial category as a set of family resemblances and refer to the Prototype Theory, the Theory of Mental Spaces (Fauconnier 1985; Lakoff 1987) and the Theory of Conceptual Metaphor (Lakoff and Johnson 1980; Lakoff 1987; Kövecses 2010) to study meaning extension not only within physical

space, but also from physical to non-physical space (e.g. state, manner/means, circumstance, or cause/reason) areas of human experience, or the so-called experiential shift. Researchers first attempt to establish concrete senses, identifying the main sense, although there are different approaches to what constitutes it. For instance, Herskovits (1988) in her work on English prepositions calls it an ideal meaning, which is an abstraction reflected in all use types of a preposition, making it similar to an invariant meaning proposed by structuralists, whereas Langacker (1987) claims that it is based on a super-schema, also highlighting its most general (schematic) underlying content. Lakoff (1987), on the other hand, refers to it as central meaning, which is generally related to physical space and codes the most prototypical uses of a lexical item, while Tyler and Evans's (2003) and Shakhova and Tyler's (2010) – the primary sense, as defined by reference to a distinct and discrete spatial scene called the proto-scene. After identifying the main sense, researchers attempt to locate all (in)direct deviations from it in physical and non-physical domains, illustrating more peripheral (Lakoff 1987) or extended (Langacker 1987) senses.

Such semantic structures are usually presented as networks of asymmetric links among other senses. According to Tabakowska (2010: 69), their positioning illustrates the diachronic development of a category of prepositional meaning, while the resulting model is always based on synchronic data. However, one of the most urgent issues that such investigations are confronted with concerns the most plausible representation of senses. As Heine (1997 quoted in Tyler and Evans 2003: 1) observes:

(...) 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.

An overview of various formats representing prepositional senses is provided by Lewandowska-Tomaszczyk (2007: 154-157). Lakoff's (1987: 416-461) investigation of the polysemous ***over***, which is based on Brugman's master thesis, is a classic example illustrating the systematic interrelation of concrete and abstract senses of the item. According to the author, 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 F and G configurations: the presence or absence of contact, a vertical or horizontal G, etc. The second group of the senses 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 locating F above G. The third group is illustrated by the "covering" schema (e.g. *the board is **over** the hole*), which is a variant of the second schema, because F has at least two dimensions and is in contact with G. The difference between the third and the first schemas can be accounted for by the fact that in the third one F's spatial parameters and the endpoint of a path become important. The remaining schemas are abstract and lie on the periphery of the prepositional category: reflexive (e.g. *turn the paper **over***), excessive (e.g. *the bathtube **over**flowed*) 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 semantic structure of ***over***, consisting of an array of image schemas connected by links of similarity, instance and trasformation, sparks doubt about its plausibility. For instance, according to Kreitzer (1997: 292), the network is methodologically so unconstrained that it allows "(...) ***across***, ***through*** and ***above*** all to be related to the polysemy network of ***over***". Therefore, Zlatev (2007: 340) wonders whether it is "(…) a characterization of *psychologically real* structures and/or processes and thus relate(s) to the individual psychological level or (…) *descriptive generalizations* over the use potential of the expressions in question." Other researchers also voice criticism, claiming that this network may exist only in the mind of the researcher, but not of the language user (Vandeloise 1991; Sandra and Rice 1995; Sandra 1998). For instance, Sinha and Kuteva (1995: 167) observe that such highly granular approaches to prepositions derive from the assumption that "spatial relational meaning… is carried by the locative particle, and only by the locative particle."

That is why Tyler and Evans's (2003) work is worthy of note, for it advocates more abstract semantic representations than those suggested by Lakoff (1987). Their position, which is called principled polysemy, holds that a particular linguistic form, e.g. the preposition ***over***, is associated with a number of distinct but related senses. Any sense directly derived from the primary sense should be traced to a sense that is based on the extension or modification of it in terms of some cognitive principles, such as background and encyclopaedic knowledge, embodiment, force dynamics, etc. The primary sense is defined by reference to a proto-spatial scene which is determined on the basis of linguistic and empirical evidence, including 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 (see also Wunderlich 1991: 593; Zelinsky-Wibbelt 1993: 12). 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, G is extended, while in the second example, it is not. However, Tyler and Evans (2003: 55-56) claim that such interpretations are context-driven for the purpose of local understanding or induced by general pragmatics and our knowledge of the world, rather than independent semantic representations associated with the preposition (see also Sandra and Rice 1995; Evans and Tyler 2004: 4-9). In other words, while ***over*** presupposes a configuration between F and G, their exact metric details derive, as the authors suggest, from contextual inferencing. The remaining part of the book illustrates the application of the model in the semantic analysis of prepositions pertaining to verticality, orientation and involving bounded G. 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 structure of ***under***. This might be due to the fact that in many cases G is the earth's surface and human interactions with entities situated higher than it are far more varied in range than with entities below it (Tyler and Evans 2003: 232).

However, some scholars criticize not only Lakoff's (1987) methodology, equating contextually varying uses of prepositions with their senses, but also Tyler and Evans' (2003) model of principled polysemy, which is in favour of more abstract semantic representations. For instance, Taylor (2017: 258) distinguishes between two types of researchers, lumpers and splitters, on the basis which approach they promote, and points out the disadvantages of each of them:

Lumpers search for wide-ranging generalizations, which may not, however, be adequate for covering niceties of usage. Splitters, on the other hand, are liable to miss important generalizations.

Geeraerts (1992), on the contrary, considers the two lines of investigation into prepositional polysemy, resulting in either highly differentiated specific or maximally generalized meanings, to be complementary rather than in conflict. Langacker's (1988: 51-53) schematic network model of category structure explicitly incorporates both aspects by proposing the coexistence of both higher and lower level representations. The researcher highlights two types of relation between the senses of a preposition: elaboration ("the relation between a schema and its instantiations") and extension ("the

relation between the prototypical and peripheral values") (Langacker 1987: 370-371).

However, in case of prepositional polysemy, whether illustrated by general or specific descriptions, an array of possible senses that a preposition may acquire in different contexts becomes a potential source of sentence ambiguity. How does the listener narrow down the range of senses that might be implicated in the interpretation of the sentence? Taylor (1993: 167-172) highlights several strategies in order to avoid such misunderstandings: (1) world knowledge, cf. *the helicopter hovered **over** the city* vs. *the boy jumped **over** the wall*; the first example implies the location of the helicopter at a place vertical to, but not in contact with the city, whereas the second utterance designates the path of the boy, since his static location would defy the rules of gravity; (2) the valence of other constituents in the sentence, especially the verb, cf. *John put* vs. *threw his coat **over** the chair*; although both verbs denote activities directed towards bringing an entity into a certain spatial disposition, only *throw* implies that the entity follows a path, a possibility which does not exist for *put*; (3) the aspectual character of the situation denoted by a sentence, cf. imperfective vs. perfective paths, as in the utterances *the plane flew **over** the Atlantic for* vs. *in five hours*; (4) informativity, i.e. the listener's interpretation of a sentence against the assumption that the speaker only provides an amount of information consistent with his communicative intentions, cf. *I flew **over** the Atlantic for five hours* vs. *I went **over** the street for five minutes*; despite their structural parallelism, the utterances are interpreted in different ways due to the scope of the temporal phase: *for five hours* denotes the duration of the flight, whereas *for five minutes* designates the amount of time spent at the destination.

As far as other works on motivated polysemy are concerned, some of them deal with linking mainly concrete senses of prepositions. For instance, Hawkins (1988) examines the category of medium constructed on the basis of similarity with the ideal meaning in terms of the geometric parameters of localizing objects in the analysis of out, into, through and in. According to the author, the entities can be (1) sometimes bounded (e.g. ***in** the cabinet*), sometimes not (e.g. ***in** the air*), (2) sometimes hollow (e.g. *the fire **in** the stove*), sometimes plain (e.g. *the crack **in** the stove*), and finally, (3) sometimes completely bounded (e.g. *the jewels are **in** the safe*), sometimes not (e.g. *a flower **in** a vase*). Since three-dimensional bounded objects are associated with the category medium by the central associative principle, any bounded object can be associated with the periphery of this category. Therefore, bounded objects in the prepositional phrases ***in** the circle*, ***in** the*

doorway, ***in*** *the aisle*, ***in*** *the same spot* will be associated to medium, even if they are not three-dimensional. Geographical configurations such as ***in*** *America*, ***in*** *Moscow* are also categorized by this principle. The latter example is the source to which another associative principle applies. It is realated to category nouns which "exhibit profiling relative to the earth as a base, such as hills and deserts, even if they have no definite boundaries" (Hawkins 1988: 258). However, Vandeloise (1994: 164-165) questions such direction of the extensions established by drawing attention to the discrepancies while deciding whether a country is two- or three-dimensional in the semantic analyses of the same preposition made by other researchers.

While examining concrete senses of the Dutch ***in*** ('in'), Cuyckens (1993) uses the concepts of containment and force dynamics, and claims that the preposition entails not only a static location but also a path. In order to explicate the first meaning, various types of medium or spatial configurations of the localizing 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*). Moreover, localizing objects can have variable specifications not only in terms of their boundedness and internal consistency, but also due to the number of dimensions, such as (5) two-dimensional, bounded (e.g. *freckles* ***in*** *her face*) or (6) two-dimensional, unbounded (e.g. *he is all alone* ***in*** *this world*), the latter signaling that the author advocates the prie-Copernicus idea of a two-dimensional world. According to the researcher, the static meanings are not only related in a motivated way, but also bear resemblance to 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 the relations among concrete senses of the Dutch preposition ***op*** ('on') and distinguish the prototypical one.

In order to illustrate the possibilities of applying a radial category approach to prepositional semantics, other researchers analyze meaning extension from concrete to abstract domains. For instance, in a survey of 53 languages, Haspelmath (1997) shows that all of them employ spatial notions for temporal relations: coincidence (e.g. ***at*** *the corner*), superadjacency (e.g. ***on*** *the table*), and containment (e.g. ***in*** *the closet*) are frequently used to indicate the occurrence of an event simultaneously with a particular clock

time (e.g. ***at*** *1:30*), day-part (e.g. ***in*** *the morning*), day (e.g. ***on*** *Monday*), month (e.g. ***in*** *July*), season (e.g. ***in*** *summer*), or year (e.g. ***in*** *2003*). Other works in the cognitive framework also attempt to establish the relationship between concrete and abstract senses of individual prepositions. For instance, Wesche (1986/87: 397) claims that the abstract senses of ***at*** (temporal, reason, etc.), though unrelated at first sight (cf. ***at*** *someone's discretion*, ***at*** *random, arrive* ***at***, *look* ***at***, etc.), in fact originate from concrete senses. However, although each extension is motivated, it is not predictable. For instance, from cases like ***at*** *3 o'clock*, ***at*** *night*, or ***at*** *Christmas*, one may want to derive a temporal scale with days as units and, therefore, have expressions like ****at*** *Monday* (*ibid.*, p. 397). In his dissertation, Navarro i Ferrando (1998) investigates ***in***, ***at***, and ***on*** – by introducing a polysemy model based on prototypes and radial categories. The author emphasizes topology, force-dynamics and function, all constituting a conceptual schema which is transformed during metaphorical mappings to abstract domains. For instance, the senses of ***at*** extend from the conceptual schema of encounter, in case of ***on*** – from support, while the semantic category ***in*** – from an enclosure schema. Moreover, quantitative analysis shows that prototypes do not always match conceptual schemas. For instance, in case of ***at***, contiguity uses are prototypical; for ***on*** – support senses are predominant, while ***in*** has two prototypes – inclusion and medium, which profile respectively the external boundaries and the interior of the container image-schema.

Wege (1991) and Evans (2009) also examine prepositional polysemy, attempting to justify the relations between concrete and abstract senses, 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*. Linstromberg (1996) discusses how to present the semantics of ***on*** (the prototypical meaning "contact of an object with a line or surface" and its metaphorical extensions) from a pedagogical perspective. Tyler and Evans (2003: 26) refer to the concept of containment rather than inclusion to define the semantics of ***in*** (e.g. *I awoke* ***in*** *my bedroom*), including its extensions to abstract situations (e.g. *Anne Frank lived* ***in*** *perilous times* or *Will is* ***in*** *love*). In a study of the motivated polysemy of ***against***, Noreika (2015) distinguishes one prototypical and seven distinct derivative senses (spatial opposition, protection, contrast, comparison, abstract opposition, temporal opposition and exchange) based on F and G types, verb collocation patterns and contextual cues.

Dirven's (1993) work is of particular interest, too, due to his analysis of the differentiated senses within one conceptual domain of meaning, such as state, manner, means, instrument, circumstance, or reason, underlying the

use of some English prepositions. For instance, the author compares the states as expressed by ***at*** (e.g. ***at*** *work*), ***on*** (e.g. ***on*** *display*), ***in*** (e.g. ***in*** *despair*), and ***under*** (e.g. ***under*** *arrest*) (*ibid.*, p. 86-87). In addition to patterns of meaning extension characteristic of individual prepositions (e.g. *a book* ***on*** *the table* vs. *some children* ***on*** *the bus*), Taylor (1993) also deals with general processes of polysemization exhibited by a number of English prepositions, e.g. a place and a path, a place and a goal, a place and a goal as the end-point of a path, a place as a result, and some others. Jamrozik and Gentner (2011) discuss psycholinguistic experiments employing statistical methods to compare the F-G relationship in meaning extension in ***in*** and ***on***, e.g. ***in*** *love* and ***on*** *a roll*. Their findings show that the prepositions retain a key element of their concrete meaning, namely, locus of control, when they describe more abstract relations, both in conventional and novel contexts. However, F ***on*** G is perceived as having greater control than F ***in*** G. Thus, in the utterance '***on*** *the job market*', someone has more control over the situation than a person who is ***in*** the job market (*ibid*., p. 1590, 1593).

Other researchers also employ a radial category approach to investigate how much the concrete meaning of a preposition remains and/or is transformed during meaning extension. Notably, such studies focus on inflecting languages. For instance, Šarić (2008) concentrates on the semantics of selected prepositions, such as ***na*** ('on'), ***u*** 'in' ***kod*** 'by, beside, next to, near, at; during; among' and ***pri*** 'by, at, near, close to' and the cases they combine with (the Genitive, the Accusative, the Locative) in Bulgarian, Serbian and Croatian, providing a comparative perspective on other Slavic languages, primarily Russian and Polish. The researcher also discusses metaphorical extension - exemplifying the relation of spatial usages of linguistic items to non-spatial usages. Shakhova and Tyler (2010) produce a network demonstrating the polysemy of the Russian preposition ***za*** 'behind, beyond'. Even though the authors admit that the prefix ***za-*** and the preposition ***za*** are semantically very close, they only focus on the analysis of the preposition. Tabakowska (2010) deals with the Polish ***za*** ('behind'), showing how the preposition and the verbal prefix can be combined into a single network. However, this idea is criticized by Pawelec (2009), who suggests a separate treatment of the preposition and the prefix. Šeškauskienė and Žilinskaitė-Šinkūnienė (2015) investigate the polysemous ***už*** ('behind') in Lithuanian, claiming that its abstract senses (e.g. temporal, as in the utterance *maždaug* ***už*** *pusvalandžio sustojo mikriukas* 'a minibus stopped **after** around half an hour') bear (in)direct relations with the primary sense. According to the authors, the relationship of the preposition with the

corresponding verbal prefix ***už-*** would posit another interesting area of semantic study.

The notion of a network of systematically related senses becomes especially handy in semantic studies of prepositions within one language and/or cross-linguistically. On the basis of the number and nature of extensions, researchers may distinguish not only easily recognizable similarities, but also subtle differences between the items studied. For instance, Taylor (1988) focuses on more than one language by investigating how the English ***on***, ***over***, ***above*** and their approximate Italian equivalents segment physical space in extra-linguistic reality. He states 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 differences in the conceptualization of the spatial relations that they entail (cf. *the lamp **above** the table* vs. *the lamp **over** the table*). However, even if this approach can account for different distributions of semantically rather similar prepositions, it raises a number of unresolved issues. The most pressing ones: why do some prepositions develop quite a large number of meaning chains, while others, apparently similar items, undergo extension in a different direction, or perhaps do not undergo it at all? And may this be fue to the existence of the neighbouring or contrasting categories?

Other studies also focus on the analysis of prepositional semantics from a cross-linguistic point of view. The results show that the development of meaning chains is certainly motivated, but not necessarily predictable as languages may categorize human experience in sometimes highly idiosyncratic ways. For instance, Šeškauskienė (2001, 2003, 2007) investigates the relationships between concrete and abstract meanings of ***behind***, ***beyond*** and ***už***, ***anapus***; ***by***, ***beside*** and ***šalia***, ***greta***, ***ties***. It is postulated that some semantic elements become foregrounded, while others become less important or are suppressed altogether during meaning transfer to abstract space. For instance, ***beside*** and ***greta*** focus on the spatial organisation of the entities, facing in the same direction in a row, as in the utterance *the young lieutenant was sitting **beside** the driver* ‘jaunasis leitenantas sėdėjo **greta/šalia** vairuotojo’. In meaning extension, ***beside*** preserves the equal status of entities; however, their incompatibility is foregrounded, e.g. *his comments were **beside** the point* ‘jo komentarai buvo pro šalį/ne į temą’. The Lithuanian ***greta*** has F and G of equal status, and their similar nature, closeness are clearly preserved in abstract meanings, e.g.

greta *kitų žymių darbų jis paliko ir žodyną* 'he left a dictionary **in addition to** other famous works' (Šeškauskienė 2007: 90-92).

Thus, prepositions are equated with "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). Steen *et al.* (2010) claim that approximately 40% of prepositional usage is metaphorical. Dirven (1993: 85) states that a preposition that identifies some location more explicitly is likely to have fewer derivative abstract senses (e.g. ***under***, ***from***, ***off***, ***out of***), while a less specific spatial preposition has a higher probability of acting as a derivational base for meaning extension (e.g. ***at***, ***on***, ***in***, ***by***, ***with***). Taylor (1993) distinguishes between multiplex (***around***, ***along***, ***through***, ***throughout***) and simplex (***in***, ***on***, ***under***, ***at***) prepositions with respect to the number of extensions that they can undergo on the basis of the profiled relation (the former group is more productive).

However, although many studies point out the relationship between concrete and abstract meanings of a preposition, there are also works that strongly question the existence of polysemy networks and the chronological primacy of space. For instance, first-language acquisition research does not show locative uses to be regularly acquired before more abstract and idiomatic ones (Rice 1999; Zlatev 2003). Moreover, on the basis of decision tasks, Sandra and Rice (1995) point out that concrete senses of ***at***, ***on***, and ***in*** prevent the recognition of examples with temporal senses, attesting to separate mental representations for spatial and temporal uses of the prepositions. Kemmerer's (2005) series of experiments also suggest that understanding temporal meanings of prepositions does not necessarily require establishing structural alignments with their spatial correlates. Such linguistic debates prove that spatial relations constitute a topical and urgent area of research, which may affect methodologies in the analysis of prepositional meaning.

Thus, cognitivists systematically investigate the *micro*-structure of prepositional meaning, as opposed to the *macro*-structure of semantic relations in the classical approach, employ some concepts used by their predecessors (e.g. *contact*, *verticality*, etc.), and consider meaning to be divisible into smaller elements, not overruling componential analysis, either, which constitutes the major method in the structuralist investigations. On the other hand, cognitive studies give much attention to meaning extension motivated by concrete senses. As seen from the present overview of works of prepositional meaning, polysemy becomes "the pivot of semantic analysis" (Ullmann 1951: 117 quoted in Lewandowska-Tomaszczyk 2007: 140). Works focusing on synonymous prepositions are not in the minority,

either, which is not always possible in the classical research. Therefore, even though the cognitive approach is frequently thought to criticize the traditional approach for its lack of thoroughness, in fact it advocates a broader view of meaning. Support for this idea can 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.

1.3 Present research: why ***žemiau***, ***po*** and ***below***, ***under***?

This dissertation humbly purports to contribute to the cognitive line of research into prepositional semantics by focusing on the Lithuanian ***žemiau***, ***po*** and ***below***, ***under***, which are considered to be their primary translation equivalents to English (Piesarskas and Svecevičius 1997; Piesarskas 2006). Below there are major characteristics of the prepositions under study.

(1) The selected items, alongside their Lithuanian antonyms ***aukščiau***, ***virš*** and the English – ***over***, ***above***, belong to one of the most highly developed subsets that prototypically involve the vertical axis with regard to the human's canonical position as standing on the ground (see also *oriented space* in Langacker 1987; *vertical space* in Dirven 1993: 74). It plays a more important role in our universe than horizontal dimensions because of the all-pervasive influence of gravity on life on Earth (Engberg-Pedersen *et al.* 1996: 362).

Under the topic of orientation, Langacker (1987) argues for the necessity to refer to the vertical/horizontal axis of the visual field (or some comparable coordinate system). According to the researcher, descriptions of spatial scenes presuppose:

(…) the normal horizontal/vertical dimensional grid we calculated in relation to the surface of the earth: this in turn reflects the orientation of our visual field when we assume our canonical upright viewing (…) We are accustomed to seeing most of the objects in our experience (…) in a canonical alignment with respect to their surrounding (…) To the extent that our conception of such objects includes a canonical viewpoint or alignment, this information is necessarily a part of an encyclopaedic characterization of the predicates designating them (*ibid*., p. 133).

Although some prepositions, for instance, ***in*** and ***out of***, do not reference any axis at all, the Lithuanian ***žemiau***, ***po*** and the English ***below***, ***under*** regularly prompt for a spatial configuration in which two entities are aligned along the negative value of the vertical axis as part of their basic lexical entries. According to Talmy (1983: 247), this axis plays "a comparable

background role as a secondary reference object in a whole paradigm of Eglish expressions", such as *on the top of* / *on the bottom of*, *on top of* / *underneath*, ***over*** / ***under***, ***above*** / ***below***, *higher than* / *lower than*.

(2) The selected prepositions are defined differently, depending on which aspect of their semantic behaviour a researcher wants to stress. For instance, according to Cienki (1989: 3), they would express a locative mode of spatial behaviour, for the object to be located is in the place identified by the prepositional place-function, e.g. *the ball* ***under*** *the table*, *a spot* ***below*** *the temple*. In contrast, the remaining types of spatial behaviour, i.e. adlative, ablative or perlative, refer to different types of motion, e.g. *the swimmer dove* ***into*** *the pool* vs. *some loose change fell* ***out of*** *my pocket* vs. *we walked* ***through*** *the forest* (*ibid*.). Such distinction between location and motion corresponds to the conceptual division of space into *stasis*, which involves topological and projective prepositions, and *kinesis*, as represented by different means to designate motion. If the primary constraint on the applicability of topological prepositions is the proximity between two entities (Kelleher *et al.* 2009: 233), the factors impacting on the semantics of projective prepositions include information about (a) the direction (e.g. *up*, *down*, *right*, *left*, *front* or *back*) in which one object is spatially aligned with respect to the other and (b) preference for a particular frame of reference (FoR) (Coventry *et al.* 2001; Levinson 2003; Kelleher and Costello 2005). In the literature on FoR, the English ***under***, ***below*** are classified as projective prepositions, because they demand a certain frame of reference (Coventry *et al.* 2001: 378-379). Moreover, experimental results indicate a strong preference towards the absolute frame of reference for such prepositions (Carlson-Radvansky and Logan 1997).

(3) In terms of their diachronic accounts, a few words must be said about each item as well. For instance, Ambrazas (1997: 406, 2005: 438) points out that depending on its syntactic and semantic properties, ***žemiau*** can function as a preposition, e.g. *Vandens buvo* ***žemiau*** *kelių* 'The water was **below** our knees', *Temperatūra nukrito* ***žemiau*** *nulio* 'The temperature fell down **below** zero', or as an adverb, from which it derives, when it does not express any relation but stands on its own and functions as an independent sentence part, e.g. *Ji nusileido* ***žemiau*** 'She descended lower'[4]. This also falls in line with Zinkevičius (1996: 171) who claims that some prepositions still maintain relations with adverbs. Due to the etymological ties, Ambrazas

[4] By way of contrast, consider the adverbs *iš tiesų* 'really, indeed, in truth', *į valias*, *iki soties* 'to one's heart's content', signifying the opposite type of semantic development (the preposition → the adverb).

(2006: 284) ascribes ***žemiau*** to a group of secondary prepositions, alongside ***aplink*** ‘round, around’, ***arti*** ‘near, close to, about’, ***dėka*** ‘thanks to, owing to’, ***greta*** ‘near, by, beside’, ***išilgai*** ‘along’, etc. (see also Zinkevičius 1981: 185).

In contrast, the Lithuanian ***po***, like ***su*** ‘with’, ***už*** ‘behind, beyond’, ***ant*** ‘on’, ***apie*** ‘about, of’, etc., is classified as a primary preposition because of the absence of any relationship with any other word in the contemporary Lithuanian language. However, in the past, the preposition was used with some verbs, as indicated by the etymological ties with the prefix ***pa/po-***, as in ***po-****kalbis* ‘conversation’, even though currently the same prefix can also be added to a noun, for instance, ***po-****žemis* ‘basement’, or to an adjective, as in ***po-****sunkis* ‘slightly difficult’ (Zinkevičius 1981: 186-187). Interestingly, preverbs, which are precursors of prepositions and prefixes, expressed spatial relations. Further etymological analysis reveals the relationship between such preverbs and nouns, especially names for human body parts. For instance, the equivalent of the Lithuanian ***po*** is the Hittite ***appan*** ‘after, behind’ (Lith. ‘paskui’), which is related to *appan* ‘the backside’ (Lith. ‘užpakalis’) (Ambrazas 2006: 307). Also, as shown in some accounts of the present-day Lithuanian ***po***, it is mentioned alongside the Latin lexeme *po-no* < *po-s(i)no* (Lith. *dedu* ‘I put’), *po-situs* (Lith. *padėtas* ‘smth which is put’) (Zinkevičius 1981: 187); however, such etymological interpretations are taken with caution in the dissertation which is not diachronic in nature. The cognates of the preposition are also identifiable in Old Prussian (***po***), present-day Latvian (***pa***) and Slavic languages (***po***) (cf. Greek ***από***, Sanskrit ***ápa***, Latin ***ab***). Currently, ***po*** as a primary preposition is sometimes replaced with ***apačioj***, which is considered a synonymous equivalent (Ambrazas 2006: 307).

In English, ***below*** appears under two different headings. Depending on its syntactic and semantic properties, it can function as an adverb, e.g. *We looked out of the aircraft window down onto the patchwork of fields below* (CED), or as a preposition, as in *The temperature is expected to drop to ten degrees* ***below*** *zero tonight* (CED). Etymologically, it is directly related to Gothic *be + low* (Tyler and Evans 2003: 123).

As to ***under***, it appears under three headings: an adverb, e.g. (...) *I often go under and swallow a lot of water* (CED), a noun, verbal, or adjectival prefix, e.g. *underwear*, *undercooked potatoes*, *undergo*; or as a preposition, e.g. *She put the thermometer* ***under*** *my tongue* (CED). In diacronic accounts, the preposition is related to Sanskrit *adhara*, which translates roughly to ‘lower’ (Tyler and Evans 2003: 123).

However, the inclusion of the Lithuanian ***žemiau***, ***po*** and the English ***below***, ***under*** in the present investigation is not random but rather instigated by several factors:

(1) In some traditional treatments of their meanings, the English ***below***, ***under*** are explicated through such general concepts as "lower than", "locative lower", "holding/moving to a lower position", "a boundary under which something is located or is happening" and others (Bennett 1975; Lindkvist 1976). In the tradition of Lithuanian linguistics, Kilius (1972, 1973c), Šukys (1998: 538), Ambrazas (1997, 2005: 444, 2006: 300) also attempt to reveal the semantics of ***žemiau*** and ***po*** by referring to these partially true notions as if the prepositions expressed exclusively spatial relations, which in fact does not display the intricacy of their semantic structures.

Cognitive studies of prepositional semantics also experience some challenges. For instance, early works usually focus on the relevance of geometry or functional relations, or the interplay of both, for the interpretation of concrete senses of the selected prepositions. For instance, Coventry *et al.* (2001) prove by means of experiments that ***over*** and ***under*** are more sensitive to functional relations than ***below*** and ***above*** (see also Johnston and Slobin 1979). In the same light, Šeškauskienė (2001) examines ***under***, ***below*** and their approximate translation equivalents ***po***, ***žemiau*** in Lithuanian. However, research on abstract senses and their relations with concrete senses, or the so-called meaning chains covering various conceptual domains, seems to be scarce. For instance, Wege (1991) discusses ***below***, which does not prove to be amenable to a necessary and sufficient description. Taylor (1993) gives an account of ***under***, when he tackles polysemization processes of a number of English prepositions, and so does Dirven (1993), but their discussion of the radial network of extensions is rather sketchy. Moreover, the researchers end up with numerous senses for each preposition. Tyler and Evans (2003), on the contrary, avoid the problem, by analysing the semantic structure of ***under*** and ***below*** according to the Model of Principled Polysemy, but their analysis seems to lack explanation and argumentation, as compared with their discussion of other prepositions, e.g. the amply studied ***over***.

(2) As far as dictionaries, especially Lithuanian (DCLL, DLL, DSLL), are concerned, they still rely on intuitive explication, which is not supported by any corpus data. As a result, we can witness the inclusion of meanings which fail to reflect the actual usage tendencies of the selected items. The archaic usage of ***po*** in regional dialects of Lithuanian might as well illustrate the point. The prevalence of cross-referential lexicographic definitions also

takes a toll. For instance, the semantics of the Lithuanian prepositions is exhausted in dictionaries (e.g. DLL) in the following way: the first sense of ***žemiau*** in the entry list is defined by the widely exploited concepts "indicating what is beneath" and "indicating a lower position", while ***po*** entails "showing the location of something beneath something else". Finally, some lexicographic treatments fail to exhaust the complexity of the semantics of some prepositions. For instance, the Dictionary of the Contemporary Lithuanian Language (DCLL) provides only one sense of ***žemiau*** ("indicating the location or action of something lower"). Modern English dictionaries, e.g. CED, on the other hand, are based on corpus data; however they also have pitfalls, failing to explicitly highlight semantic relations between various senses of prepositions. The assumption of lexicographers seems to be that the meaning of such items is too complex and unsystematic. However, the validity and importance of such semantic desriptions are debated in the present analysis for several reasons. First, vague concepts hinder the distinction between synonymous prepositions. Moreover, they do not facilitate the comprehension of meaning extensions, either, which is a crucial factor for polysemization. That is why it is important to establish the semantic elements anew to provide unambiguous descriptions: "metalinguistic inadequacy leads us to the idea that there are more specific semantic considerations to be taken into account when describing the meanings of the prepositions under study" (Šeškauskienė 1998: 103).

(3) Although within the languages the selected prepositions act as pairs of competing near synonyms (***po*** vs. ***žemiau***, ***under*** vs. ***below***), their semantic affinity might be just cursory. After a closer contrastive examination there is a possibility of establishing disparate patterns of structuring physical space, which may result in different uses of the items, excluding their substitution in some contexts. This is especially manifest during the process of meaning extension to other conceptual domains. For instance, some prepositions may be less apt to develop such extensions, while others may cover some of the domains expressed by other lexical items. However, according to Taylor (1988: 309), even interchangeability in some contexts does not necessarily mean that prepositions are absolute synonyms. Different semantic types, attesting to slightly or markedly idiosyncratic ways of dividing up physical space, are more likely to emerge when crossing the boundary of one's language/culture, which consequently results in different paths of meaning extensions. In other words, the relevance of the cross-linguistic analysis of ***po*** vs. ***under*** and ***žemiau*** vs. ***below*** is indisputable, because English and Lithuanian may vary not only intra-linguistically but also across languages

in their degree of granularity when dividing up physical and non-physical space.

Thus, in the light of these major reasons, the dissertation aims at examining the polysemy of a group of prepositions pertaining to the negative value of the vertical axis: the Lithuanian ***žemiau***, ***po*** and the English ***below***, ***under***. The study will adhere to the principles of cognitive linguistics, which explains language data by appealing to how the human mind works, for it is well-suited for exploration of linguistic data. However, to my knowledge, a more systematic investigation of this kind has not been undertaken in Lithuania not only in a cognitive vein, but also from a cross-linguistic perspective, which constitutes another plausible reason for the present analysis. An attempt will be made to establish concrete and abstract senses and explicate their links in the semantic networks within and across the two languages. In this dissertation, the relation between ***po*** and ***under*** and the prefixes is only considered when they co-occur together; no exhaustive description of the polysemous prefixes ***pa-, po-*** **or** ***under-*** will be provided.

1.4 On the meaning of some noun cases

The assumption that grammatical forms are meaningful elements is not new to linguistics: the semantic role of a case, or "the grammatical feature that 'flags' the grammatical function of a word or phrase within a sentence (among other grammatical properties)" (Evans and Green 2006: 500; cf. Chomskyan generative grammar) has received a lot of attention. However, researchers seem to tackle case semantics in a different manner. For instance, traditional studies, which entail the works of Neogrammarians and the structuralists, isolate a single meaning that exists behind a plethora of functions displayed by each case. However, Delbrück (discussed in Berg-Olsen 2004: 4) establishes *Grundbegriff*, or the original meaning of each Indo-European case, from which different case meanings in various languages could be derived. While analyzing Russian cases, Jakobson (discussed in Luraghi 2008: 137-138), on the other hand, assumes that they build a system, and *Gesamtbedeutung*, or an aggregate meaning of each case, rather than the one found in a particular context (*Sonderbedeutungen*), should be investigated in relation to other cases. In addition, the researcher establishes a central meaning (*Hauptbedeutung*) for each case.

However, both treatments above do not seem to work when tested on a large amount of data. For instance, the Neogrammarian framework explains diachronic facts about language, and cannot necessarily be successfully applied to synchronic analyses. The structuralists, whose approach is purely

synchronic, are also criticized for postulating a single aggregate meaning which is too vague and all-encompassing. As Wierzbicka (1980:xv quoted in Berg-Olsen 2004: 17) points out, 'A person who does not know Russian cannot learn to use the Russian cases on the basis of Jakobson's formulas'. Thus, when the model of radial categories was suggested by Lakoff (1987), distinct 'functions of cases', as found in many reference grammars, have been ruled out. Moreover, cases start to be considered as highly polysemous items, positing a network of motivated relations, capturing both abstract and more specific meanings at the same time. Therefore, some traits of the traditional approach to cases, for instance, the notion of a hierarchy of meanings when the aggregate meaning is the most schematic, and the postulation of a central meaning for each case, are also found in the modern framework of cognitive grammar. Finally, a challenge for cognitive grammar is to show that the use of a certain case with a certain preposition is semantically motivated and can be related to other uses of the case in question. In other words, a general assumption is that the meaning of a preposition must correspond to the general meaning of the case it combines with. As Šarić (2008: 278) points out, "The preposition contributes to the semantic specificity of the relationship being conveyed without fundamentally altering the semantic contours of the case itself."

The Lithuanian prepositions under analysis in this dissertation govern several cases expressing the relations of nouns. For instance, ***žemiau*** requires only the Genitive, whereas ***po*** is used with as many as four rather than three case-forms, as stated by some grammars (cf. Ambrazas 2006: 407): the Genitive, the Accusative, and the Instrumental, while the Dative is very scarce and found only in some regional dialects (Markevičius 2014: 75-76). According to Ambrazas (2006: 296), it signals archaic usage which was later replaced with Genitive constructions. The Genitive and the Accusative are considered central cases, whereas the Dative and the Instrumental are peripheral cases; however, each of them is characterized by a specific range of semantic functions, which will be discussed briefly below.

In the traditional approach, the Genitive may denote ablative meaning, expressing motion away from something in dynamic contexts, or partitive usage, indicating that only part of a whole is affected by some action (Ambrazas 2006: 215, 294-295, 310). In the cognitive linguistic framework, on the other hand, the case, as employed in Classical Greek, Latin, Old English, and Medieval French, is prototypically linked to the meaning of possession and origin or their multiple metaphoric extensions, e.g. alienable → inalienable possession (Luraghi 2009; Nikiforidou 2009). However, in Slavic languages, it may refer to a source (withdrawal), a goal (approach), a

whole (possession/'of', quantification), and reference (lack, comparison, near), while in Latvian, it is described using two concepts – a reference point and a participant in an intrinsic relationship (cf. Langacker 2000) – and may express a whole (roughly equivalent to the partitive Genitive in the traditional classification), a substance (in non-metaphorical senses), a source (in certain senses), a landmark and several other meanings (Berg-Olsen 2004).

The Dative from a traditional grammar perspective entails the addressee of an action; the indirect object in relation to the Accusative marking (a) the direct object or person affected by some physical action, (b) the result of some action, (c) the sensory content, as well as (d) spatial uses such as various types of direction (e.g. inside, around, through, etc.) (Zinkevičius 1981: 191; Ambrazas 2006: 198, 246, 296, 310). The Dative case markers within the framework of cognitive linguistics, on the other hand, may highlight the semantic role of an experiencer as the prototypical meaning, as in Janda's discussion of the Czech and Russian Dative (see Berg-Olsen 2004: 19), or involve concepts of personal sphere and a target person, as in Dąbrowska's analysis of the Polish Dative (ibid. p. 20). A personal sphere includes "the persons, objects, locations, and facts sufficiently closely associated with an individual that any changes in them are likely to affect the individual as well", while a target person is "an individual who is perceived as affected by an action, process, or state taking place within or impinging upon his personal sphere" (ibid.). For example, in Latvian, the Dative contains seven semantic roles that could be characterised as instantiations of the target person role: experiencer, possessor, debitor, recipient, benefactive, anti-recipient and malefactive (Berg-Olsen 2004). In Šarić's (2008: 275) study of South Slavic languages, the bare Dative strongly concentrates on the end-point of some motion, i.e. the destination. Therefore, the most frequent – and thus prototypical – contexts in which this construction presently occurs involve animate, human goals, designated by personal pronouns and names of persons. Moreover, Serra-Borneto (1995a quoted in Oakley 2007: 221) claims that the semantics of the Dative also involves static relations, as opposed to a dynamic element, which is the underlying key notion of the Accusative. For instance, German renders the search domain being completely inside G by the Genitive, while F moving from outside G to its inside is expressed by the Accusative: "the physical movement of a TR along a path which makes contact with a significant aspect of the LM (i.e. either the LM itself or a region associated with the LM)" (see Smith 1993: 533 quoted in Berg-Olsen 2004: 18). Other researchers, for instance, Janda (2002: 6) and Luraghi (2009: 145),

emphasize total affectedness, accounting for such spatial uses of the Accusative as direction or extension as used in reference to a stretch of space or time. The evidence from Classical Greek shows that total affectedness can explain possible alternation between the Accusative and the Genitive with prepositions (*ibid*. p. 146):

(…) while the accusative conceptualizes a stretch of space without further implications on its internal structure, the genitive conceptualizes space as constituted by sub-parts. Accusative landmarks are continuous, while genitive ones are discontinuous (…) Consequently, [an entity] moving inside an accusative landmark does not follow a straight path (…) but moves around randomly; (…) [an entity] moving inside a genitive landmark moves along a clearly defined path, and can always be tracked down.

Lastly, the Instrumental may traditionally refer to reason, manner, human body parts, e.g. *negaluoja akimis* '[He] has pain in his eyes' [3.NOM.SG.M] feel unwell.PRS.3 eye.INS.PL, or express the so-called "circumstantiae vel adjuncti", as in *apdovanoja tave auksu, sidabru* '[He] endows with gold, silver' [3.NOM.SG.M] endow.PRS.3 gold.INS.SG silver.INS.SG (Kleinas discussed in Labutis 1990: 116). In the latter case, according to the researcher, abliative usage with the preposition ***su*** 'with' is also possible. The Instrumental may also denote states when employed with some verbs. Ambrazas (2006: 297) highlights comitative meaning which denotes accompaniment and describes manner (cf. "companion metaphor" in Lakoff and Johnson 1980: 135). In cognitive studies, on the other hand, the case has been a favourite of several scholars. For instance, Janda (1993: 139-141 quoted in Luraghi 2009: 143-144) shows that the functions of the Russian Instrumental can be captured by four image-schemas building a network. The 'conduit instrumental' (instrumental of means) acts as the prototype and is related to the 'instrumental of setting' (instrumental of space and time) and to the 'attributive instrumental' by foregrounding or backgrounding the instrumental, or by focusing on the participant or the event. The fourth image-schema, according to the researcher, is the 'comitative and proximate instrumental', which is derived in a similar way as the other two image-schemas, but related with image-schemas 2 and 3 rather than with the prototype.

According to Zinkevičius (1981: 185, 1996: 171), the role of noun cases has been decreasing due to the growing preference for prepositions. The process of prepositions replacing cases is still taking place in inflecting languages.

2. DATA AND METHODOLOGY

As indicated earlier in this dissertation, the present analysis which focuses on the Lithuanian ***žemiau***, ***po*** and the English ***below***, ***under*** has several objectives. It aims at (a) defining concrete and abstract senses of the prepositions, (b) showing their relatedness within each semantic network, and (c) comparing the internal structure of the networks not only within the language but also cross-linguistically. This chapter describes data collection and the methodological framework, in the light of which these goals of the present research on the prepositional meaning have been set.

2.1 Data

In this investigation, the simplest type of prepositional expression, following Herskovits (1986: 7), consists of three constituents: a preposition (PREP) and two noun phrases (NP), as in the following examples: *temperature* ***below*** *zero* ‘, *a ball* ***under*** *the table* (may own examples)[5]. However, since the main issue of interest here is the semantic structure of the Lithuanian ***žemiau***, ***po*** and the English ***below***, ***under*** rather than grammatical relationships, contextual variations which do not follow the pattern NP + PREP + NP are also allowed. Thus, a spatial expression may refer not only to objects, but also to events, states, or actions, and thus may consist of a clause rather than just a noun phrase: *We live* ***below*** *the river Neris* (my own example). The terminology adopted here to characterize the two elements of a spatio-physical scene mediated by human conceptual processing is borrowed from Talmy (1983, 2000; see also Coventry *et al.* 2001; Levinson 2003; cf. Fillmore 1968). An entity, which is mentally foregrounded, is typically smaller and movable, and constitutes F, whereas an entity which functions as some background which respect to it and is usually larger and immovable is G. Thus, in the previous samples, *temperature, a ball* and *we (live)* constitute Fs, whereas *zero, the table* and *the river* are Gs.

In order to fully understand the intended meaning of a particular utterance, the present study draws on authentic empirical data, for corpus-based research reduces the linguist’s subjectivity regarding tendencies and principles as well as corroborates the hypotheses put forward. However, since the data from the corpora is produced by a community rather than by

[5] Constructed examples are used only in a few exceptional cases to illustrate points pertaining to other, genuine examples.

an individual, the survey of the prepositional senses must not be considered as an actual/realistic representation of the semantic network in the language user's mind (Boers 1996: 39). Nevertheless, even though the total linguistic accountability is hardly attainable, the capacity of the corpus to establish the frequency of the occurrence of the linguistic items at issue serves well in distinguishing between their senses.

In order to achieve the aims of this study, utterances containing the selected prepositions have been accessed from the freely available (1) British National Corpus (BNC), created by Mark Davies, Oxford University Press and (2) Corpus of the Contemporary Lithuanian Language (CCLL), compiled at the Centre of Computational Linguistics at Vytautas Magnus University, Kaunas (Lithuania). The choice of the corpora has been motivated by the following reasons.

BNC contains 100 million words of texts from a wide range of registers (e.g. spoken, fiction, magazines, newspapers, and academic), offering unparalleled insight into variation of British English. Even though the corpus was created in the 1980s – early 1990s, it was slightly revised prior to the release of the second edition BNC World (2001) and the third edition BNC XML Edition (2007). Thus, if one is inherently interested in only British English, there is really no reason not to take advantage of the corpus. The CCLL, which comprises a collection of texts of 160 million words, is selected for being the only representative and authoritative source of information on the usage of the contemporary Lithuanian language since 1990. Like BNC, it also contains data from different registers (newspaper texts, non-fiction and fiction books, documents, spoken language texts).

However, only fiction is selected from a variety of registers from the two corpora for it illustrates a relative balance of concrete and abstract senses of the items studied. In the BNC, it comprises 15,909,312 words, which constitutes 16.5%. The section of fiction in the CCLL, on the other hand, contains 18 461 597 words, or 11.6%, in comparison with other registers. Other types of discourse are deliberately ruled out in the dissertation research, for they may have utterances with particular prepositional senses, e.g. an academic register is more likely to have samples displaying abstract rather than concrete senses of the items under study.

More details about the data used for the dissertation research are provided below:

Table 1: Absolute frequencies of the items in this study

Preposition	Corpus: register	
	BNC: fiction	CCLL: fiction
žemiau	–	261 (out of 673)
po	–	1,000 (out of 50,243)
below	1,000 (out of 2,047)	
under	1,000 (out of 8,127)	–
Total	2,000	1,261
Grand total	3,261	

As shown in Table 1, 3,261 concordance lines (see Grand total) have been collected from the two corpora: 2,000 from the BNC and 1,261 from the CCLL (see Total). Out of 673 instances of ***žemiau*** from the CCLL, as few as 261 illustrate prepositional usage, which accounts for 38.78% of all the cases, were manually selected for the present analysis, because in the remaining utterances (412, or 61.22% of all the cases), the item is used as an adverb. As regards ***po***, 1,000 concordance lines out of 50,243 with prepositional usage, excluding the item as a prefix for a noun, an adverb, and an adjective, were randomly selected from the CCLL. The Lithuanian examples used to illustrate the meaning of ***žemiau*** and ***po*** are glossed following the Salos Glossing Rules, which have been adapted to the specifics of Baltic morphology (Nau and Arkadiev 2015).

In the English corpus, 1,000 out of a total of 2,047 instances with ***below*** have been randomly selected for analysis, because in the remaining utterances, which account for 51.15% of all the cases, the item manifests adverbial usage. As to ***under***, 1,000 instances of only prepositional usage out of 8,127 have been taken for investigation, ruling out adverbial usage or cases when the item is employed as a noun, verbal, or adjectival prefix.

As to the number 1,000, it has been chosen on purpose for several reasons in the present analysis. First, according to Kennedy (1998: 67-68 quoted in Marcinkevičienė 2000: 9), it constitutes a limit which should not be surpassed if a lexicographer wants to remember, define and classify all the usage instances of a lexeme. The researcher implies that there is no point in increasing one's corpus if it becomes impossible to handle all the data. Second, as Fillmore (1992: 38 quoted in *ibid*. p. 12) points out, corpus representativeness in order to be appropriately used as the basis for generalizations concerning a language as a whole is determined by intuition. In other words, if a researcher knows a language fact, it must be reflected in his/her compiled corpus. However, if something is missing, the corpus must

be expanded. In this dissertation, 1,000 was a maximum number of examples for ***below***, ***under*** and ***po*** as no new instances of the prepositions have been spotted during the data extraction procedure. Even more so, the patterns of their usage started repeating, which indicated the senses that have already been established.

2.2 Research methodology

The methodology used for assigning the senses of the prepositions under study will be explained further.

The qualitative method refers to the identification of the various senses of the Lithuanian ***žemiau***, ***po*** and the English ***below***, ***under***. For this purpose, the concordance lines are annotated for their senses, the procedure of which deserves a few words. During this process, each sample from the two corpora is classified by marking F and G not only as a concrete object, a person or a human body part, but also as an abstract entity, an action/process, or even as some idea, property, quantity, abstraction, or relation. So, space is given here a broad interpretation and includes, apart from physical, also temporal, that of mental and emotional perception, oral discourse, and a number of other spaces (see the Mental Space Theory in Fauconnier 1985; Lakoff 1987; Dirven 1993). In addition to these parameters, if necessary, the spatial configuration of the entities, their internal structure and idealized geometric shapes, as prompted for by the prepositions, are also taken into consideration. F-G functional interaction, which might be best modelled by a cluster of functions rather than a single functional element (Bietel *et al.* 1997), is not underestimated, either. However, in both cases, emphasis is laid on pragmatic considerations as opposed to the way the items function in a sentence (Herskovits 1986; Vandeloise 1991, 1994).

Moreover, very often certain uses are motivated by a number of cognitive (non-linguistic/pragmatic) factors, such as the speaker's dispositions or social, cultural, etc. constraints. For instance, linguistic topology, or what Talmy (1983: 269-271) defines as a disjunct character of schematization, allows to focus on the same situation from different perspectives. In other words, language offers a range of options, and the speaker chooses the one that best matches his/her communicative intentions. Thus, specificity and salience given to the various aspects of the same spatial situation (Zelinsky-Wibbelt 1993: 353-354; Schmid 2007; see also *focal adjustments* in Langacker 1987; *attention phenomena* in Talmy 2007) play a major role in the sense identification procedure.

All in all, the process of meaning construction in this investigation is equated with conceptualization, whereby prepositions serve as prompts for an array of conceptual operations and the recruitment of background encyclopaedic knowledge, all of which enter into various types of relations with each other (Evans 2007: 131; Cruse 2000; cf. Taylor 1995: 29-37). However, it is important to distinguish between senses conventionalized in semantic memory and their contextual variants produced on-line for local understanding. For this purpose, a model of word meaning termed principled polysemy is employed (Tyler and Evans 2003). It is based on two major principles motivating the extensions of the primary sense:

(1) For a sense to be distinct, i.e. instantiated in memory, it must contain an additional semantic element not apparent in any other senses associated with a particular form. In other words, a distinct sense must involve (A) a successive change in the set of concepts, such as (a) strong interdependencies between the preposition and the dynamic, or kinetic, and/or geometric characteristics of G (e.g. static/dynamic, dimensional/adimensional, etc.), (b) features very much like those for G that define F, as required by the specific relation expressed, (c) the relationship (topological, such as contact, proximity, etc., and/or functional) between the two entities, and/or (B) projection onto a new domain (Tyler and Evans 2003: 42-43; cf. Wesche 1986/87; Lakoff 1987). The first operation applies to concepts within the same domain, so a locative concept may be extended to another locative one, a temporal concept to another temporal one, etc. In other words, the transition between concepts takes place gradually (see *shifts* in Navarro i Ferrando 2006: 176). However, the second operation in meaning construction involves changing domains. This process rests on the principle that the new is conceptualized in terms of the familiar, so abstract domains are understood in analogy to concrete ones. The Theory of Conceptual Metaphor (Lakoff and Johnson 1980; Lakoff 1987; Kövecses 2010), which allows to identify similar relational structures in different conceptual domains, is employed to justify such meaning extension in the selected prepositions. However, the difference from one sense to another is gradual because many instances from actual language use are of problematic classification.

(2) According to Tyler and Evans (2003: 42-43), instances of a prepositional sense must be context independent. In other words, the distinct sense cannot be inferred from another sense and the context in which it occurs.

In addition to the two criteria to yield various senses of the prepositions under analysis, the Principled Polysemy Model also establishes which of

several competing senses should be regarded as the primary sense in a semantic network. Following Tyler and Evans (2003: 52), it is distinguished by referring to a proto-scene, which is "an idealized mental representation across the recurring spatial scenes" mediated by human conceptual processing and associated with a particular preposition. In this dissertation, a proto-scene is clearly distinguished from the primary sense: the former is related to extralinguistic reality and diagrammed for each item under study, while the latter deals with the realm of semantics. Tyler and Evans (*ibid.*), on the other hand, do not always make the difference clear, as seen from their contradictory statements, such as "the term *proto* captures the idealized aspect of the conceptual/mental relation, while the use of the term *scene* emphasizes spatio-physical and hence perceptual (e.g. visual) awareness of a spatial scene" (*ibid.*), which refers to extralinguistic knowledge, and "other distinct senses may have become derived from the proto-scene" (*ibid.*), showing that both terms already signify semantic concepts (*proto-concept* in Navarro i Ferrando 2006).

The researchers also suggest methodology for such sense identification, namely the following prompts, the order of which has been modified during the process of the dissertation research to reflect the actual semantic tendencies of the items (*ibid.* p. 47-50):

(1) The physicality of F and G plays an important, if not the most significant, role in the primary sense identification procedure in the present analysis. It is related to such principles of cognitive linguistics as the experiential approach and embodiment that allow understanding abstract domains in terms of physical knowledge, relying on the way we interact with the surrounding world, perceive and comprehend it (Johnson 1987; Lakoff 1987). The justification of this prompt can also be found in studies of metaphor which emphasize the usefulness of this principle in polysemy, stating that the primary sense is usually more physical, closer to our bodily experience (Lakoff 1987; Steen *et al.* 2010). Other meanings extend from the primary sense and usually express temporal relations, refer to other more abstract domains, such as measurement, emotions, etc. Interestingly, the intensely physical orientation of the entities in the spatial relation expressed by a preposition in the primary sense is not suggested by Tyler and Evans's (2003).

(2) Contextual clues associated with a reasonably stable frequency of occurrence play a significant role in the selection of the primary sense as well (Sinha and Kuteva 1995; see also Evans and Tyler 2004). For any distinct sense which is directly related to the primary sense, we should be

able to find sentences whose context implies additional meaning associated with the distinct sense (Tyler and Evans 2003: 49).

(3) One more criterion for primary sense identification in the selected prepositions is frequency of use in the semantic network, which is the unique spatial configuration involved in the majority of the distinct senses in the semantic structures under study. However, as shown in the forthcoming analysis, it cannot be a determining factor, as in some prepositions abstract senses are the most predominant. For instance, the Lithuanian ***po*** 'under', when it designates temporal relations, exhibits the overwhelming frequency of occurrence.

(4) Given the very stable nature of the conceptualization of spatial relations within a language, a plausible candidate for the primary sense may also be the earliest attested meaning, hence the relevance of the diachronic factor, which falls in line with other cognitively-oriented works focusing on inflecting languages (Pawelec 2009; Tabakowska 2010). According to Tyler and Evans (2003: 47), historical evidence shows that at least for the majority of English prepositions, such uses have to do with a spatial configuration holding between F and G. However, even though the earliest attested sense constitutes a major element of the semantic network of some prepositions, in other cases, when some usage is no longer active, it does not, so the diachronic factor should be proceeded with caution.

(5) The use of a preposition in composite forms should not be underestimated, either (Langacker 1987). According to Tyler and Evans (2003: 48), spatial particles are involved in at least two types of composite lexical units – compound forms (e.g. ***over****coat*) and verb particle forms (e.g. *look* ***over***). Their investigation into English prepositions has revealed that many senses in a semantic network can appear in these composite lexical units; however, there are some senses which cannot. The researchers suggest that participation in composite forms cannot directly determine which sense is primary, but resistance to participate can be taken as a clue that a particular sense is probably not primary in the network.

(6) Relations to other prepositions constitute another important factor for primary sense identification. Tyler and Evans (*ibid.*, p. 48-49) draw attention to certain clusters of such items that appear to form compositional, or contrast, sets, dividing various spatial dimensions, e.g. ***over*** vs. ***under*** and ***above*** vs. ***below***. According to the researchers, the meaning of a preposition that participates in such a set is partially determined by how it contrasts with other members of the compositional set, i.e. the label used to denote a particular F-G configuration is determined in relation to other labels in the

contrast set. Therefore, a particular sense used in the formation of such a set may be a plausible candidate for the primary sense.

However, not every utterance can be clearly classified to illustrate a particular sense. Therefore, the transparency of the present stage of analysis has been tested by annotating all the utterances for prepositional senses twice. The time gap between the processes of annotation is about 6 months. The mismatch of the results attained constitutes about 4%, which does not seem to affect the reliability of the study.

Finally, having established the concrete and abstract senses of the Lithuanian ***žemiau***, ***po*** and the English ***below***, ***under***, a radial category approach (Lakoff 1987) with its roots in the Prototype Theory (Rosch 1975, 1978; Taylor 1993) is employed to illustrate their motivated relations. Image transformations, being direct reflections of our visual or kinaesthetic experiences, and metaphor models are believed to play a major role in forming semantic networks organized around the primary sense. Language-specific and cross-linguistic semantic elements of the selected prepositions are observed applying the contrastive method of research. The occurrence of each sense in the corpora is presented in both absolute and relative frequencies, for the latter is more suitable for comparison because of the unequal number of the items under analysis (***žemiau***: 261, ***po***: 1,000, ***below***: 1,000, ***under***: 1,000).

3. SEMANTIC ANALYSIS OF SOME LITHUANIAN AND ENGLISH PREPOSITIONS

3.1 ***Žemiau***

The Lithuanian ***žemiau*** in the CCLL displays a relatively restricted range of uses: in as few as 261 out of a total of 673 examples (see Table 1) does it function as a preposition; the remaining utterances illustrate its usage as an adverb. However, the chief concern in the forthcoming analysis pertains to literal and metaphorical uses of the item as a preposition employed with the Genitive (GEN).

Langacker (1987) observes that the more frequent a lexical unit, the more senses it is likely to develop (see also Taylor 1998: 309). Thus, the low occurrence of ***žemiau*** in the corpus seems to correlate with its rather simple semantic structure. Table 2 illustrates the frequency of instantiation of each sense of the preposition, as distinguished during the annotation procedure.

Table 2. Senses of ***žemiau*** (absolute and relative frequencies)

Senses	No of samples	Total	Grand total
1. Primary	160/61.3%	193/73.9%	261/100%
2. Geography	33/12.6%		
3. Measurement	37/14.2%	68/26.1%	
4. Value	31/11.9%		

As shown in Table 2, ***žemiau*** profiles two types of meanings: senses 1-2 pertain to physical space, whereas senses 3-4 are associated with non-physical space. As to the relationship between concrete vs. abstract senses (73.9% vs. 26.1%), it reveals preference for the former in the development of the preposition from the corresponding adverb, which forecasts multiple extensions of its highly productive synonym ***po*** ‘under’ away from the domain of spatial verticality (for more ideas on the influence of neighbouring or contrasting categories on the extension of a category, see Lakoff 1982: 17; cf. Taylor 1988: 309). As regards the occurrence of the established senses in the semantic structure of ***žemiau***, value, which is related to non-physical space, is the least dominant (11.9%), while the primary sense, illustrating physical space, is encountered most (61.3%). Thus, the frequency of instantiation, as outlined by Tyler and Evans (2003)

in their primary sense identification procedure, seems to be a valid parameter in the present corpus sample.

The semantic peculiarities of the Lithuanian preposition under study, as attested by the CCLL data, are discussed in the following way. First, the primary sense is established and its extensions in physical and non-physical space are examined. Next, motivated relationships between the senses, or use types, that differ in status are highlighted in the form of a semantic network.

3.1.1 Defining the primary sense

3.1.1.1 Key components of the proto-scene

Figure 1 offers an approximate depiction of the conceptual spatial relation between the two entities, as coded linguistically by the Lithuanian ***žemiau*** and represented in the proto-scene by the diagrammatic configuration between a sphere (F) and a bold line (G).

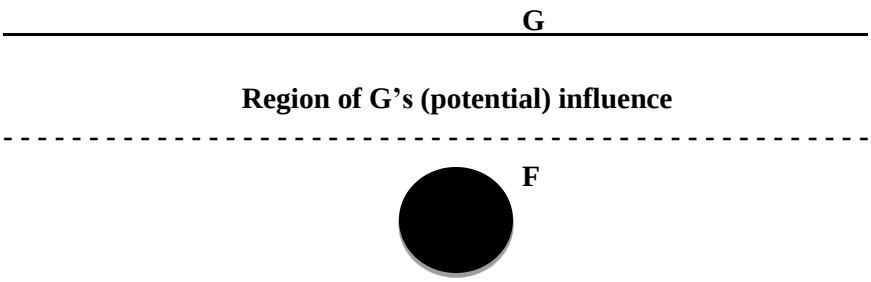


Figure 1. Proto-scene for spatial scenes with ***žemiau***

The CCLL data attest to several features of the proto-scene above. First, the schematic construal in Figure 1 stipulates that F is located lower than G in Euclidean space along the vertical axis, e.g.:

(1) *(...)* ***žemiau*** *krūtinės – (...) apvalus pilvukas.*
Žemiau chest.GEN.SG round.NOM.SG.M belly.DIM.NOM.SG
'(…) **below** the chest – a (…) round belly.'

(2) *(...)* ***žemiau*** *(...) kabinos spindėjo penketas iliuminatorių.*
Žemiau gear-box.GEN.SG shine.PST.3 five.NOM.M portlights-GEN.PL
'Five portlights were shining just **below** the gear box.'

In examples (1)-(2), G functions as a geometric means of referencing, i.e. the position of 'zero', and is determined by the speaker's eye level, hence the bold line in Figure 1. However, various parts of the entity may be selected as

reference points. For instance, in the data cited so far, it is the lower edge of a chest and a gear box that is referred to, though implicitly, by means of background world knowledge. On the contrary, in other utterances from the corpus, ***žemiau*** explicitly confines F below the spatially lower part of G, which is attested by combinability patterns with the words *dugnas*, *apačia*, both meaning 'bottom':

(3) *(...) vamzdžius kloti* ***žemiau*** *griovio dugno.*
Pipes.ACC.PL lay.INF **žemiau** ditch.GEN.SG bottom.GEN.SG
'(…) to lay pipes **below** the bottom of the ditch.'

(4) *(...) vamzdžiai* ***žemiau*** *ledo sluoksnio apačios.*
Pipes.NOM.PL **žemiau** ice.GEN.SG layer.GEN.SG bottom.GEN.SG
'(…) pipes **below** the bottom of the ice layer.'

However, the upper part of G can also function as a means of referencing, which discards the importance of orientation in the semantic structure under study:

(5) *(...)* ***žemiau*** *viršutinės dalies plytėjo podiumas.*
Žemiau uppermost.GEN.SG.F part.GEN.SG.F stretch.PST.3SG podium.NOM.SG
'(…) **below** the uppermost part there stretched a podium.'

Such sentences, when some part of G becomes salient, or highlighted, during the process of conceptualization, illustrates the asymmetry of this entity, or what Talmy (1983) defines as biased geometry, while Langacker (1987) terms as profiling.

When a geometric reference is implied by means of background world knowledge or mentioned explicitly, F, for instance, portlights, pipes, or a podium, which is situated below it, marks the boundary of space extended along the vertical axis. However, the F-G configuration does not necessarily form a straightforward line: the gear box is conceptualized as a boundary below which five portlights appear, but their location may be rather indefinite. Likewise, pipes are lower than an ice layer or a ditch; however their place is not so explicitly defined, nor are the exact whereabouts of a podium. What is important in the present F-G arrangement is F's location with respect to G' boundary, not the entity as a whole. That is why even in the example about a protruding round belly below the chest, which seems to deny the required positioning of the objects, the notion of a boundary remains the overriding factor, because only the lower part of a chest participates during the process of conceptualization despite the fact that a belly is literally directly under it. On the other hand, the features of F (a belly) and G (the chest) may also play a role here, because both entities belong to the human body, making it the third reference object.

Moreover, the conceptual spatial relation denoted by ***žemiau*** in the present proto-scene does not imply contact, or contiguity, which corresponds to what Cuyckens (1994) defines as a coincidence relation (when F coincides with G, or rather, with a specific portion thereof). The importance of graded distance is clearly manifested by the frequency of collocations denoting an amount of space between the two vertically situated objects (see also Hawkins 1984: 367-373). For instance, the adverbs *šiek tiek*, *kiek*, *vos*, all meaning 'a little bit/just', usually indicate a short distance, while *gerokai*, *žymiai*, both implying 'rather/considerably', emphasize a long distance between F and G:

(6) *(...) šiek tiek* ***žemiau*** *praviros burnos pastebėjo (...) baltas rankas.*
A little bit **žemiau** open.GEN.SG.F mouth.GEN.SG notice.PST.3SG white.ACC.PL.F hand.ACC.PL
'(…) [he] noticed white arms a little bit **below** the parted lips.'

(7) *Vos* ***žemiau*** *plaukų (...) buvo (...) randas.*
Just **žemiau** hair.GEN.PL be.PST.3SG scar.NOM.SG
'Just **below** the hairline there was a (…) scar.'

(8) *(...) paltais, ilgais, (...) gerokai* ***žemiau*** *kelių.*
Coat.INS.PL long.INS.PL.M rather **žemiau** knee.GEN.PL
'(…) coats, long, rather **below** the knees.'

(9) *(...) vidinės linijos kirtosi žymiai* ***žemiau*** *centro.*
Inner.NOM.PL.F line.NOM.PL RFL.intersect.PST.3PL considerable-ADV **žemiau** centre.GEN.SG
'(…) inner lines intersected considerably **below** the centre.'

Various units of length are also encountered with the preposition, signalling the importance of segregating the entities conceived as boundaries of vertical space. For instance, inches, centimetres, metres, etc. exemplify customary systems of measurement, while fingers, floors, etc. illustrate less commonly practised ways of ascertaining distance. In the CCLL data, this type of prepositional usage is usually found in descriptions of objects when the spatial configuration of F and G is of utmost importance:

(10) *(...) žaizda žiojėjo per keturis colius* ***žemiau*** *pirmosios.*
Wound.NOM.SG gape.PST.3SG PREP four.ACC.M inch.ACC.PL **žemiau** first.GEN.SG.F
'(…) the wound was gaping four inches **below** the first one.'

(11) *(...) žuvys 0,2 m* ***žemiau*** *ledo sluoksnio (...)*
Fish.NOM.PL 0.2 m **žemiau** ice.GEN.SG layer.GEN.SG
'(…) fish 0.2 m **below** the ice layer (…)'

(12) *Kanalas (...) trijų pirštų atstumu* ***žemiau*** *bambos.*

Channel.NOM.SG three.GEN.PL finger.GEN.M.PL distance.INS.SG **žemiau** navel.GEN.SG

'The channel (…) <u>three fingers</u> **below** the navel.'

When vertical distance between F and G is at issue, the use of the Lithuanian ***po*** 'under', which constitutes a seemingly close synonym of ***žemiau***, is excluded in the present corpus sample. However, it is definitely found in everyday usage, as in the translation of the title of Jules Verne's classic science fiction adventure novel *20000 mylių* ***po*** *vandeniu* '20,000 leagues **under** the seas', emphasizing the relation of being straight under the bottom part of some line (***po*** *vandeniu, žeme* '**under** water, ground' etc. but ****žemiau*** *vandens, žemės* '***below** water, ground'). Nevertheless, the relevance of negative evidence for establishing the components of the proto-scene is still illustrated by the oddity of ***po*** if combined with such modifiers as *daug* 'a lot', *žymiai*/*gerokai* 'noticeably', *vos/šiek tiek* 'just/slightly', all denoting gradable distance but not depth, as in the example with water:

(13) *Randas <u>vos</u>* ***žemiau*** *plaukų (...) linijos/****po*** *plaukų (…) linija.*

Scar.NOM.SG just **below** hair.GEN.PL line.GEN.SG/***under** hair.GEN.PL line.INS.SG

'A scar just **below**/***under** the (…) hairline.'

However, graded distance between F and G does not exhaust the components of the proto-scene involving ***žemiau***. In particular, the location of the entities, which are aligned along the vertical axis not necessarily directly under each other, presupposes the absence of their functional (Vandeloise 1991, 1994), or extra-geometric (Coventry *et al.* 2001), interaction (cf. *proximity* in Lindkvist 1976, Cienki 1989, Dirven 1993, Maljar and Seliverstova 1998, Šukys 1998, Valiulytė 1998). In other words, G is not capable of affecting F, hence a punctured line in Figure 1, which separates G's region of influence from F below it (cf. *geometric region* in Šeškauskienė 2003, 2007). In other words, the preposition merely divides the proto-scene into two spatially discontinuous portions or *subspaces* (Šeškauskienė 2001, 2004), when one of them is conceptualized as being lower with respect to the other on the vertical measurement line. By way of comparison, in the following utterance, the synonym ***po*** entails a slightly different geometric configuration, entailing the possibility of functional interaction between the entities:

(14) *Palindau* ***po*** *stalu/****žemiau*** *stalo (...)*

Go.PST.1SG **po** table.INS-SG/***žemiau** table-GEN.SG

'I went **under**/****below*** the table (…)'

In the example above, the arrangement of F and G implies that they are directly under each other on the vertical scale, so ***po*** can emphasize a

potential cover for a person beneath the table, only the two-dimensional parallel surface of which is metonymically highlighted during conceptualization. However, ***žemiau*** is unacceptable in this case, for it does not reflect this type of concentrated location, nor does it allow the construal of G as a two-dimensional lamina, everywhere equidistant and not meeting; rather, the prepositional usage entails the conceptualization of G as a line (cf. ***po*** *stalu* '**under** the table'/ *****žemiau*** *stalo* '***below** the table', but ***po*** *vandeniu* '**under** water' / ***žemiau*** *vandens lygio* '**below** the water level'). Thus, when both prepositions can be used interchangeably, they still evoke different construals of the same spatial scene, and it depends on the speaker which of them to select. In other words, the existence of one preposition does not prevent another from encroaching on its semantic space, even in situations that clearly relate to opposite spatial relations. For instance, in case of ***žemiau***, only the lower edge of a chest is highlighted, whereas ***po*** puts emphasis on this human part as a whole (for more ideas on such interface of prepositions, see Šarić 2008: 107-124), cf.:

(15) *Sukryžiavau rankas* ***žemiau*** *krūtinės/***po** *krūtine.*
Cross.PST.1SG arm.ACC.PL **žemiau** chest.GEN.SG/**po** chest.INS.SG
'I crossed my arms **below**/**under** the chest.'

Thus, the alignment of the entities along the negative value of the vertical axis, with F in a lower contact-free position than G but not necessarily straight under it and, therefore, escaping its (potential) functional influence, makes up the proto-scene under study. However, these attributes are not to be understood as semantic primitives, for they acquire their meaning only in the whole that they form part of, not in isolation. The preposition also attests to the schema of place, or rest, as opposed to that of motion or path (the terms are borrowed from Jackendoff 1983), which corresponds to an attribute at a higher level of conceptualization, or what Wege (1991: 279) calls as a relational feature. However, the geometrical aspects of the entities, or what Rauh (1988 quoted in Wege 1991: 279) refers to as selectional features, are also important for the construer in the semantic description under study. For instance, G may be conceptualized as a line (e.g. a hair line, the lower edge of a chest) or a point (e.g. the centre of intersection, a navel). Even when the entity lends itself to the conceptualization of a two-dimensional surface, it must perpendicular to the object being localized. As regards F, it may be reduced to a point (e.g. a wound, a scar), a line (e.g. pipes, arms) or even a surface (e.g. a podium). A wide range of combinations of geometric paramaters can be illustrated by example (8), where G (knees) can be viewed as a line or a point, while F (coats) constitutes a vertically

prolonged two-dimensional object; however, only its horizontal lower part metonymically participates during the process of conceptualization (for more ideas on the relevance of geometry in the semantics of prepositions, the Lithuanian *skersai* 'across' in particular, see Mikulskas 2009). Whether these entities are porous or non-porous, consist of several parts or pertain to a continuous mass, is also irrelevant for the proto-scene. Moreover, viewing such spatial scenes may entail both intrinsic and relative frames of reference without any semantic consequences. In other words, the vantage point, or the construer, may be external (cf. *off-stage* in Langacker 1987) or involve the coincidence of the main reference point and G's salient features, while axes and angles are projected on the basis of its geometry. In the present analysis, this type of proto-scene, which entails F being lower than but not necessarily straight under G along the negative value of the vertical axis, will be referred to as the typical, most representative, or primary sense of ***žemiau*** + GEN, as related to physical space and constituting the basis for extended meanings. Its typicality is mainly attested by two closely interrelated criteria: (1) the physical aspect and (2) the frequency of instantiation in the corpus. Both of them will be discussed in more detail in the forthcoming section.

3.1.1.2 Types of F and G

As to the frequency of the Lithuanian ***žemiau*** in the primary sense, it constitutes the highest percentage of instantiation (61.3%) in comparison to the remaining senses established in the CCLL data (see Table 2). Table 3 illustrates types of F and G characteristic of this meaning.

Table 3. Types of F and G in the primary sense of ***žemiau*** (absolute and relative frequencies)

G / F	Human body	Concrete object	Total 2
Human body	22/13.8%	5/3.1%	27/16.9%
Concrete object	27/16.9%	43/26.9%	70/43.8%
Action/process	34/21.2%	15/9.4%	49/30.6%
Abstract entity	12/7.5%	2/1.2%	14/8.7%
Total 1	95/59.4%	65/40.6%	160/100%

As seen from Table 3, the physical aspect of the primary sense of the preposition is mainly determined by the nature of G. In other words, in all of

the instances, it is either human morphology or any other concrete entity in a spatial scene characterized by purely geometric content, i.e. negative verticality, graded distance, F's undefined location and the absence of functional interaction (59.4% vs. 40.6%, respectively, see Total 1). A preference for the human body as G can be accounted for by studies of conceptual metaphor, which attest to the fact that reasoning about the world is based on our bodily experience (Lakoff and Johnson 1980; Lakoff 1987; Kövecses 2010). In other words, our body acts as a frequent source not only in the process of metaphorization, but also, first of all, during the conceptualization of the concrete, i.e. spatial scenes. Therefore, the primary sense of the preposition constitutes a good illustration of the notion of embodiment in the cognitive linguistics view of meaning, as summarized by Gibbs (2006: 9) (see also Rohrer 2007: 25-47):

People's subjective, felt experiences of their bodies in action provide part of the fundamental grounding for language and thought. Cognition is what occurs when the body engages the physical, cultural world and must be studied in terms of the dynamical interactions between people and the environment. Human language and thought emerge from recurring patterns of embodied activity that constrain ongoing intelligent behaviour [;] [therefore] we must (…) seek out the gross and detailed ways that language and thought are inextricably shaped by embodied action.

As regards the overall relative frequencies of different types of F, the location of which is rendered with respect to the human body or any other concrete object in the CCLL data with the prepositional usage, human body parts and other concrete entities account for the largest number of instances, as shown by 16.9% and 43.8% of the instances in Table 3. Actions/processes and abstract entities are encountered in 30.6% and 8.7% of the utterances, respectively. Quite a large number of the examples with actions/processes acting as F may be explicated by different grammatical contructions that ***žemiau*** occurs in, e.g.:

(16) *Jis (…) gestikuliavo rankomis **žemiau** juosmens.*
3.NOM.SG.M gesture.PST.3.SG hand.INS.PL **žemiau** waist-GEN.SG
'He (…) gestured with his hands **below** the waist.'

(17) *Moteriškei panižo **žemiau** bambos.*
Woman.DAT.SG itch.PST.3.SG **žemiau** navel.GEN.SG
'The woman felt itching **below** the navel.'

In example (16), the process is grammatically expressed by the verb (*gestikuliavo* 'gestured') taking an object (*rankomis* 'hands'). In example (17), on the other hand, the process is grammatically rendered by the use of a

single verb (*panižo* ‘felt itching’). However, according to Zlatev (2007: 327), both types of F can be treated as processes.

As far as various types of F-G combinations are concerned, they display the following tendencies. First of all, different parts of the human body may feature as G with ***žemiau*** in the primary sense, e.g. *pilvas* ‘belly’, *alkūnės* ‘elbows’, *burna* ‘mouth’, *juosmuo* ‘waist’, *bamba* ‘navel’, *pečiai* ‘shoulders’, *širdis* ‘heart’, etc. In terms of geometric attributes, in examples (18)-(19), F which is viewed as a prolonged object (a beard and sleeves); however only its lower part participates in the process of conceptualization (an instance of metonymy), while in examples (20)-(21), on the other hand, F’s geometric parameters lose their importance altogether:

(18) *(…) **žemiau** juosmens buvo (…) ilga balta barzda.*
Žemiau waist.GEN.SG be.PST.3SG long.NOM.SG.F white.NOM.SG.F beard.NOM.SG
‘(…) a long white beard was (…) **below** the waist.’

(19) *(…) švarkelio rankovės vos siekė **žemiau** alkūnių.*
Jacket.DIM.GEN.SG sleeve.NOM.PL CONJ reach.PST.3PL **žemiau** elbows.GEN.PL
‘(…) the sleeves of the little jacket barely reached **below** the elbows.’

(20) *(…) skausmas (…) nusileidžia (…) **žemiau** pečių (…)*
Pain.NOM.SG RFL.descend.PRS.3 **žemiau** shoulder.GEN.PL
‘(…) the pain (…) descends **below** the shoulders (…)’

(21) *Jis smogia **žemiau** juostos.*
3.NOM.SG.M hit.PRS.3SG **žemiau** waist.GEN.SG
‘He hits **below** the waist.’

The utterances above also illustrate major types of F with the preposition in the primary sense when human morphology functions as G. First of all, the location of other human body parts, e.g. not only *barzda* ‘beard’ but also *rankos* ‘hands/arms’, *plaukai* ‘hair’, *šukuosena* ‘hairstyle’, etc., is determined in this way (13.8%, see Table 3). Sometimes F refers to a person, the downwards location of whom is determined with reference to the speaker’s body. Nevertheless, it does not violate the prevailing conceptualization of F as a line, only the top part of which is highlighted during the process of construal, e.g.:

(22) *Jam šešiolika, o mums – **žemiau** pečių (…)*
3.DAT.SG.M sixteen.NOM CONJ 1.DAT.PL **žemiau** shoulders.GEN.PL
‘He is sixteen and **below** our shoulders (…)’

There are also utterances when F cannot be separated from the human body as it is inherently relational because of internal or external reasons, e.g.

randas ‘scar’, *ištatuiruotas skaičius* ‘tattooed number’, *žaizda* ‘wound’, *griovelis* ‘a small hollow place’, *dėmė* ‘spot’, etc.:

(23) *Akys sustojo ant kruvinos dėmės **žemiau** smilkinio.*
Eyes.NOM.PL stop.PST.3PL on bloody.GEN.SG.F spot.GEN.SG **žemiau** temple.GEN.SG
‘The gaze fixed on the bloody spot **below** the temple.’

Other concrete objects, which need to be localized with respect to the human body, mainly include garments, e.g. *suknelės* ‘dresses’, *kelnės* ‘trousers’, or their constituent parts, for instance, *rankovės* ‘sleeves’, *užtrauktukai* ‘zips’, *kišenės* ‘pockets’, etc., and make the prevailing group (16.9%, see Table 3).

Moreover, abstract entities, such as *skausmas* ‘pain’ in example (20), or actions/processes, e.g. *smogti* ‘hit’ in example (21), whose location is determined with reference to the human body, should also be taken into consideration so as to give a broader picture of the primary sense of ***žemiau***. More examples of abstract entities include *energijos kanalai* ‘energy channels’, *siela* ‘soul’, *smūgis* ‘blow/punch’, etc., whereas *gestikuliuoti* ‘gesture’, *panižti* ‘become itchy’, etc. refer to actions/processes that need to be localized. As shown in Table 3, such types of F appear in 7.5% and 21.2% of the CCLL data, respectively. However, when spatially aligned with respect to the human body, they do not affect the interpretation of the primary sense of the preposition. In other words, understanding the conceptual spatial relation denoted by ***žemiau*** is not constrained and delimited by the characteristics of these entities. What remains important is the geometric content associated with the sense, i.e. negative verticality, graded distance, F’s undefined place and the absence of functional engagement between F and the human body acting as G.

However, the physical aspect of the primary sense of ***žemiau*** is also manifested when other concrete objects, only the lower or upper part of which participates in conceptualization, combine with various types of F, which does not in any way influence the established elements of the semantic structure under study (40.6%, see Table 3):

(24) *(...) geltoni pakinkliai **žemiau** sijono.*
Yellow.NOM.PL calve.NOM.PL **žemiau** skirt.GEN.SG
‘(…) yellow backs of the knees **below** the skirt.’

(25) *(...) molėtų upės skardžių **žemiau** Slabaldos tilto.*
Clay.GEN.PL.M river.GEN.SG bank.GEN.PL **žemiau** Slabalda.GEN.SG bridge.GEN.SG
‘(…) steep clay river banks **below** the bridge of Slabalda.’

(26) ***Žemiau** pašto ženklo buvo (...) adresas.*

Žemiau post.GEN.SG stamp.GEN.SG be.PST.3SG address.NOM.SG

'**Below** the stamp there was an (…) address.'

(27) *Garsas sklido (...) **žemiau** mūsų namų.*

Sound.NOM.SG spread.PST.3SG **žemiau** 1PL-GEN home.GEN.PL

'The sound came (…) **below** our home.'

(28) *Nugėriau (...) **žemiau** laso.*

Drink.PST.1SG **žemiau** lasso.GEN.SG

'I drank by approximately an inch **below** the lasso.'

Example (24) illustrates human body parts (*pakinkliai* 'backs of the knees') in the position of F in this type of spatial relationship (3.1%, see Table 3). In examples (25)-(26), other concrete objects take the lead, either conceptually distinct, such as bridges, or as an integral part of another object, e.g. a postcard or a letter, such as addresses (26.9%, see Table 3). Finally, the location of abstract entities (*garsas* 'sound') and actions/processes (*nugėriau* 'I drank') is determined with reference to G as a concrete object in examples (27)-(28) with ***žemiau*** (1.2% and 9.4%, respectively, see Table 3).

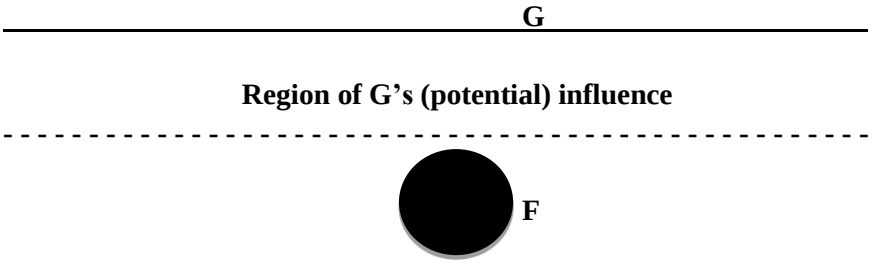
On the other hand, following Talmy (1983), the above examples (16)-(28) would also illustrate spatial scenes characterized by (a) one G, as in (22), where the shoulders are the primary reference object, or (b) more than one G, as in (18)-(19) with a beard and sleeves in the position of F, where a line becomes an encompassive secondary reference object (*ibid*. p. 245-246). Interestingly, there are almost no instances with the preposition in the primary sense requiring F immediately below G, i.e. the absence of spatially aligning the entities in a vertical line is especially evident in example (26) – even though the address (F) is literally underneath the stamp (G), it definitely requires more space than G.

Thus, in the light of the major components of the proto-scene involving the conceptual spatial relationship designated by the Lithuanian ***žemiau***, it would not be mistaken to consider the preposition to have purely spatio-geometric content conventionalized in its primary sense, the typicality of which is attested by the frequency of instantiation and a concrete type of G, either human body parts or any other concrete object. Further in the analysis, it will be shown how less typical senses, both concrete and more abstract, are continuously related to the primary sense by exploiting and transforming it in different ways, i.e. the underlying principle of motivated polysemy will be taken into consideration. First, ***žemiau*** + GEN, as confined to concrete senses will be discussed, and then the investigation will proceed to the more abstract senses of the Lithuanian preposition.

3.1.2 Geography-related sense

Another concrete sense of ***žemiau***, which is found in 12.6% of the CCLL instances (see Table 2), refers to geographic descriptions (cf. topographical-distance in Tyler and Evans 2003: 130). Its schematic representation in Figure 2 illustrates semantic elements which are uniform and varying in comparison with the primary sense.

a) Map reading (metaphorical processing)



b) Non-map reading (non-metaphorical processing)

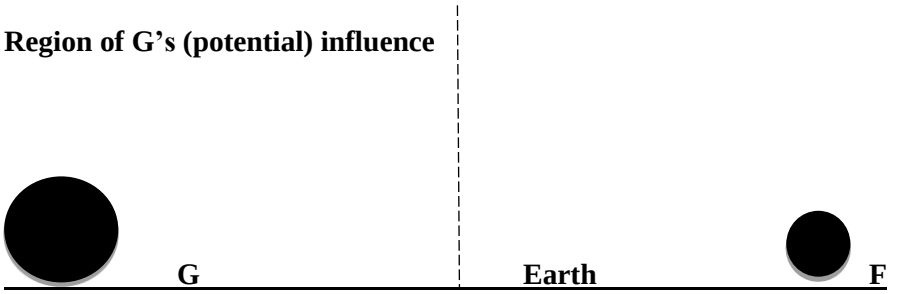


Figure 2. Spatial scene in the geography-related sense of ***žemiau***

As shown in Figure 2, the spatial configuration, as linguistically coded by the preposition, seems to entail the location of F with respect to G in Euclidean space on either vertical or horizontal axes, depending on the vantage point, which signals the gradability of the present sense, e.g.:

(29) *(...) Jeloustounas driekiasi* ***žemiau*** *kontinentinės plokštės.*
Yellowstone.NOM.SG RFL.extend.PRS.3 **žemiau** continental.GEN.SG.F plate.GEN.SG
'(…) Yellowstone extends an area **below** the continental plate.'

(30) *(...) jiedu dažnai pasiekdavo Šventąją* ***žemiau*** *Ožkų salos.*
3PL.two.NOM.M often.ADV reach.HAB.PST.3PL ***žemiau*** Goat.GEN.PL island.GEN.SG

'(…) they would often reach the river Šventoji **below** the island of Goats.'

(31) *(...) kelio sampilos **žemiau** Vormforso.*
Road.GEN.SG mound.NOM.PL **žemiau** Vormphors.GEN.SG
'(…) mounds in the road **below** Vormphors.'

On the one hand, the schematic representation of the spatial scenes above may involve a vertical line as the arrangement of the entities due to large-scale space between them is similar to their positioning on maps (map reading (a), see Figure 2). In other words, Yellowstone, a river and mounds in the road are conceptualized on the basis of a human navigation system or optical equipment as lying south of the continental plate, the island and Vormphors, respectively, hence the importance of 'earth-based geometry' or 'earth-associated space', implying the four basic geographic orientations, in the semantic description under study (Talmy 1983: 244-245). By way of comparison, Lindstromberg (2010: 124) claims that the English ***across*** is used to talk about east-west travel more than north-south. Moreover, he adds that people usually treat north as 'up' and south as 'down'. Since the UP-DOWN axiology is a metaphor, a map reading prompted by such corpus examples also requires a metaphorical interpretation. As Jacob (2006: 1 quoted in Edney and Pedley 2020: 942) puts it, "Seeing the world from above is a timeless fantasy that geographical maps make actual by way of metaphor." Thus, the geography sense of ***žemiau*** may be treated as a metaphorical extension of its primary sense.

On the other hand, it also seems possible to spatially align F and G in examples (29), (30), and (31) in a different manner. In other words, Yellowstone, a river and mounds in the road may be conceptualized as situated with reference to the continental plate, the island and Vormphors, respectively, along the horizontal axis, hence small-scale space between the entities which can be grasped by the human mind. Such non-map reading (see Figure 2b) may also highlight the similarity of the present semantic structure with the primary sense, when the place of F is not strictly defined with reference to G being higher than it. In other words, rather than stipulating that the park "is buried" under the continental plate, a river literally flows under the island, and mounds are made beneath Vormphors, this type of construal implies G as an elevated entity and, therefore, a geometric reference, i.e. the position of 'zero' (see the larger sphere as compared to F in Figure 2b), while F is away from it and parallel to the plane of the horizon. So, an element of verticality may still be inferred during the process of conceptualization even though it seems to be backgrounded by the horizontal axis. However, even though the non-map reading of geographical

scenes, as coded by ***žemiau*** and illustrated in Figure 2b, looks very tempting to become part of the semantic structure of the preposition, there is a strong argument against such an interpretation. Namely, it is not surprising that the place of F, whose geometric parameters and internal structure do not bear any significance, is even more strictly undefined in geographical contexts as compared to its localization as required by the primary sense. However, G must still function as an object below which F forms a vertical line with it designating the boundary of this type of extended space. Otherwise, it seems likely that ***žemiau*** in such descriptions would be impossible due to the use of language means pertaining to the horizontal axis, for instance, ***prieš*** 'in front of' / ***už*** 'behind', *dešiniau* 'on the right' / *kairiau* 'on the left', etc.

As shown by the CCLL data, the position of G in the utterances of this type is usually taken by concrete inanimate entities, e.g. continents, cities, villages, islands, rivers, bridges, and other salient landmarks in the environment. As regards F, it refers to concrete entities, such as cemeteries, roads, bathing waters, meadows, houses, rivers, lakes, etc. However, ***žemiau***, when used in the geography sense, may also code the location of people. Actions/processes and abstract objects are also allowed, as in the following instances:

(32) ***Žemiau*** *Etenmuro per ją nėra kur persikelti.*
Žemiau Edenmore.GEN.SG across.PREP 3.SG.ACC NEG.be.PRS.3 where.ADV RFL.cross.INF
'**Below** Edenmore it is impossible to find a suitable place to cross it.'

(33) *(...) dogmos (...)* ***žemiau*** *Meisono-Diksono linijos.*
Dogma.NOM.PL **žemiau** Mason.GEN.SG Dixon.GEN.SG line.GEN.SG
'(…) dogmas (…) **below** Mason-Dixon line.'

In addition to the spatial configuration of the entities in bounded space on the vertical axis, the CCLL data also attest to other elements of the geography-related sense. Like in the primary sense, another semantic element pertains to graded distance due to the apparent absence of contact between F and G (see also Hawkins 1984: 367-373), which is clearly manifested by the frequency of such words as *šiek tiek/kiek* 'a bit/slightly' (although there is an element of subjectivity or 'plasticity' in what we count as proximal or distal), e.g.:

(34) *(...) pieva dar <u>šiek tiek</u> tęsiasi* ***žemiau*** *namo.*
Meadow.NOM.SG more.ADV slightly.ADV **žemiau** house.GEN.SG
'(…) the meadow continues <u>slightly</u> **below** the house.'

Various units of measurement denoting the exact extent of distance (e.g. feet, miles, etc.) are also encountered with the preposition under study,

signalling the importance of segregating the two entities and graded distance as a significant element of the postulated sense:

(35) *(...) kelią, esantį trisdešimčia pėdų* ***žemiau*** *krūmų.*
Road.ACC.SG be.PRS.PA.NOM.SG.M thirty.INS foot.GEN.PL **žemiau** bush.GEN.PL
'(…) the road which is thirty feet **below** the bushes.'

(36) *Už trijų ketvirčių mylios*, ***žemiau*** *tos vietos, kur stovėjo keliautojai, tyvuliavo ežeras (...)*
After.PREP three.GEN quarter.GEN.PL mile.GEN.SG **žemiau** that.DEM.GEN.SG.F place.GEN.SG where.CONJ stand.PST.3.PL traveller.NOM.PL nestle.PST.3.SG lake.NOM.SG
'After three quarters of a mile, **below** the place where the travellers were standing, there nestled a lake (…)'

Finally, the absence of any functional attributes makes an additional semantic element of the geography sense of ***žemiau***. In other words, G is not capable of affecting F, hence a punctured line in Figure 2, which separates G's region of influence from F away from it (cf. Vandeloise 1991, 1994; see also *geometric region* in Šeškauskienė 2007). In this sense, the preposition merely divides the spatial scene into two spatially discontinuous portions or *subspaces* (Šeškauskienė 2001, 2004), where one of them is conceptualized as being lower with respect to the other on the vertical axis.

Thus, an inherent feature of negative verticality, which is metaphorically inferred (map reading), in addition to retaining the alignment of contact-free and functionless F and G, constitutes the geography sense of the Lithuanian ***žemiau*** and makes it directly related to the primary sense. In terms of relational features at a higher level of conceptualization (Wege 1991: 279), the sense illustrates the schema of place or rest, as opposed to that of motion or path (Jackendoff 1983). Selectional features, i.e. the dimensionality and internal structure of the entities, are relevant for the semantic description under study, because G is still conceptualized as a line or a point, while F may be reduced to a point (cf. Rauh 1988 quoted in Wege 1991: 279). Moreover, construing such spatial scenes may entail both intrinsic and relative frames of reference, i.e. the vantage point may be external (cf. *off-stage* in Langacker 1987) or involve the coincidence of the main reference point and G's salient features, while axes and angles are projected on the basis of its geometry.

3.1.3 Measurement sense

In addition to the primary sense and geographical descriptions, both pertaining to the physical domain of human experience, the Lithuanian ***žemiau*** may also entail measuring vertical distance from some arbitrary reference level in a more abstract domain (14.2% of the instances, see Table 2; cf the less sense in Tyler and Evans 2003: 128), e.g.:

(37) *(...) temperatūra nukrisdavo gerokai **žemiau** nulio.*
Temperature.NOM.SG drop.HAB.PST.3SG well.ADV **žemiau** zero-GEN.SG
'(…) the temperature would fall well **below** zero.'

(38) *Temperatūra buvo dvidešimt laipsnių **žemiau** nulio.*
Temperature.NOM.SG be.PST.3SG twenty.NOM degree.GEN.PL **žemiau** zero.GEN.SG
'The temperature was twenty degrees **below** zero.'

According to Tyler and Evans (2003: 128), the measurement sense is likely to derive from examples directly related to our physical experience, in which the correlation is more apparent: *The water level is far **below** what is needed to supply the district during the summer months. Ian's head was still **below** the mark made for his brother when he was twelve*. Thus, like geographical descriptions, this meaning is directly related to the primary sense, for having the same element of distance associated with scales of verticality, which is frequently attested by the productivity of combinability patterns with such words as *dvidešimt laipsnių* 'twenty degrees', *gerokai* 'rather/noticeably', or other contextual evidence, e.g. the verb *kristi* 'fall', further strengthening the interpretation of distance down the vertical axis, as assigned to the preposition in examples (37)-(38).

However, what renders the meaning of measurement different from the primary sense is the change of domain, when the structure of physical space is mapped onto the structure of mental space. By way of comparison, in the following example, ***žemiau*** appears in the primary sense, for the lower location of an abstract entity (the heat centre) is determined with respect to a concrete object (the navel), acting as a means of referencing, which does not trigger the experiential shift from physical to non-physical space even though there is a tight correlation between quantity and vertical elevation:

(39) *(...) karščio centras yra maždaug penki centimetrai **žemiau** bambos.*
Heat.GEN.SG centre.NOM.SG be.PRS.3 approximate.ADV five.NOM.PL centimeter.NOM.PL **žemiau** navel.GEN.SG

‘(…) the heat centre is located approximately five centimetres **below** the navel.’

Thus, in the utterances illustrating the measurement sense of the preposition, G refers to some standard, norm or any other level on a vertical measurement line, serving as a division between two subspaces. Therefore, fairly productive usage patterns in the CCLL pertain to limits, thresholds, lines, levels, hence frequent combinability with the words *riba* ‘limit’, *linija* ‘line’, *lygis* ‘level’, *slenkstis* ‘threshold’ and various units of measurement as G is conceptualized as a line. Even in such cases when G is *nulis* ‘zero’ or *laipsniai* ‘degrees’, it designates a limit below which F is localized, hence a linear type of conceptualization again. In a number of instances, the position of F is usually taken not only by *temperatūra* ‘temperature’, *laipsniai* ‘degrees’, *šaltis* ‘cold’, *speigas* ‘frost’ but also by such abstract entities as sound, speed, weight, etc.; however, human beings are not excluded, either:

(40) *Gyventojų dalis, esanti **žemiau** skurdo ribos (…)*
Resident.GEN.PL part.NOM.SG be.PRS.PA.NOM.SG.F **žemiau** poverty.GEN.SG threshold.GEN.SG
‘The number of residents **below** the poverty threshold (…)’

(41) *Jis buvo apie penkiasdešimt pėdų **žemiau** jūros lygio.*
3.NOM.SG.M be.PST.3SG approximate.ADV fifty.NOM.F foot.GEN.PL **žemiau** sea.GEN.SG level.GEN.SG
‘He was approximately fifty feet **below** the sea level.’

(42) *(…) valties greitis nukrito **žemiau** Šeldono konstantos.*
Boat.GEN.SG speed.NOM.SG drop.PST.3SG **žemiau** Sheldon.GEN.SG constant.GEN.SG
‘(…) the speed of the boat dropped **below** the Sheldon constant.’

As shown by the examples, when the Lithuanian ***žemiau*** is used in the measurement sense, what is still relevant is the positioning of such entities with respect to an abstract G with an element of distance along the negative value of the vertical axis. However, verticality here seems to enter our experience in a different way, giving rise to the orientational LESS IS DOWN metaphor entailing a decrease in quantity as a downward motion (Lakoff and Johnson 1980).

3.1.4 Value sense

The final use type of the Lithuanian ***žemiau***, as attested by the CCLL data, also pertains to the field of axiology, since the remaining 11.9% of the instances reflect the value sense of the preposition (see Table 2; cf. the inferior sense in Tyler and Evans 2003: 129), e.g.:

(43) *(...) kiekvienas turi ką nors, stovintį tiek aukščiau, tiek **žemiau** savęs.*

Everyone.NOM.SG.M have.PRS.3SG somebody.ACC stand.PRS.PA.ACC.SG.M both.CONJ above.PREP and.CONJ **žemiau** self.RFL

'(…) everyone has somebody standing both above and **below** them.'

The role of physically and culturally grounded spatial orientation, including up and down, in forming emotional and other concepts is pointed out by Lakoff and Johnson (1980) and Kövecses (2010). Thus, the interpretation of the sentence above is not that a person is located physically lower than but in an inferior situation relative to another person, hence the expression of the orientational metaphor LOW STATUS IS DOWN. Examples (44)-(46), on the other hand, illustrate the orientational metaphor LOW QUALITY IS DOWN, also reflecting a downward orientation:

(44) *Žukauskas mano dalykėlį "Jaunuosiuose" laiko **žemiau** literatūros.*

Žukauskas.NOM.SG 1SG.POSS thing.DIM-ACC.SG young.LOC.PL.M.DEF consider.PRS.3SG **žemiau** literature.GEN.SG

'Žukauskas considers my short text in the journal "Jaunieji" **below** literature.'

(45) *(...) ką Živilė darė, Danai atrodė prasta, negabu, kvaila, **žemiau** kritikos.*

What.ACC Živilė.NOM.SG do.PST.3SG seem.PST.3 bad.NA talentless.NA stupid.NA **žemiau** criticism.GEN.SG

'(…) everything what Živilė did Dana thought was bad, talentless, stupid, **below** criticism.'

(46) *(...) prasidėti su manimi – **žemiau** jos orumo.*

RFL.start.INF with.PREP 1SG.INS **žemiau** 3SG.GEN.F dignity.GEN.SG

'(…) to start an affair with me – **below** her dignity.'

Thus, in all of these sentences, the metaphors offer a subtle way of expressing evaluation – if upward orientation usually goes with positive evaluation, downward orientation implies negative assessment (Kövecses 2010). However, even in such metaphorical extensions, there may be an element of distance from G in non-physical space, which may prove the relations of the value sense with the primary sense of ***žemiau***, e.g.:

(47) *(...) jei aprašyčiau siaubą, vis tiek knyga būtų <u>410 metrų</u> **žemiau** tiesos.*

If.CONJ write.IRR.1SG horror.ACC.SG still.CONJ book.NOM.SG be.IRR.3SG 410 metre.GEN.PL **žemiau** truth.GEN.SG
'(…) even if I described the horror, the book would be 410 metres **below** the truth.'

On the other hand, the sense of value may also be directly related to measurement due to the same comparison with some quality-related standard acting as G. In other words, in addition to distance in non-physical space, there appears a new element pertaining to emotions. The figurative meaning of such expressions has become so established, i.e. conventionalized, in the speech community that its metaphorical force is no longer obvious for most language users.

3.1.5 Semantic network

Figure 3 illustrates the semantic network of the Lithuanian ***žemiau***, as attested by its usage types in the CCLL.

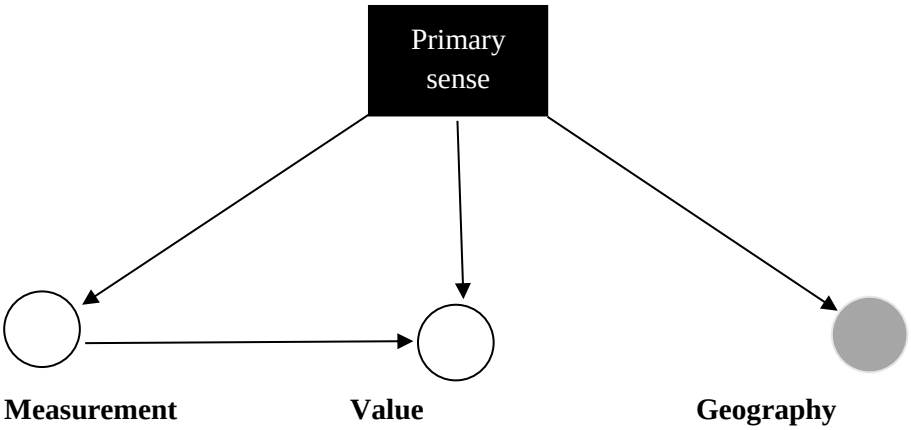


Figure 3. Semantic network of ***žemiau*** + GEN

The proto-scene, which refers to the primary sense of the preposition, acts as the derivational basis for geographic descriptions. They may require a change of domains, from concrete to more abstract, prompting map reading, which pertains to metaphorical processing. Since F and G are concrete entities, although various natural and artificial physical features of an area are more preferred than other objects, the sphere in Figure 3 is made grey to signal the gradability of the sense (it is neither concrete, nor abstract, but definitely more concrete). However, switching the axis, from vertical to

horizontal (non-map reading), is ruled out in the present sense due to the requirement for F to be vertically aligned below G but in a place which is not clearly defined.

As to the remaining extensions, they are both determined by a shift in domains, from physical space to that of measurement and value, which can be explained by the Conceptual Metaphor Theory (Lakoff and Johnson 1980) and the Theory of Mental Spaces (Fauconnier 1985, 2007). However, as shown by the semantic network of the preposition, value is related not only to the primary sense but also to that of measurement due to the same comparison with some quality-related standard. Moreover, G is abstract rather than concrete, so is F, although concrete objects, including human beings, are not excluded, either. However, what remains important even in non-physical space is G's boundary acting as some reference level. Finally, the usage of ***žemiau*** with the Genitive is also motivated, for the case is considered to denote a reference point in cognitive grammar accounts (Berg-Olsen 2004). Thus, what are believed to be distinct senses of the Lithuanian preposition are in fact directly or indirectly derived from the primary sense and have become part of the semantic network through routinization and entrenchment of meaning.

3.2 ***Po***

Table 4 illustrates the senses of the Lithuanian ***po***, as established in the CCLL data, which is in line with Langacker's (1987; see also Taylor 1998: 309) observation that the more frequent a lexical item, the more semantically complex it becomes (cf. the low frequency of occurrence of ***žemiau*** → a small number of its senses, see Table 2).

Table 4. Senses of ***po*** (absolute and relative frequencies)

Noun cases / Senses	INS	GEN	ACC	DAT	Total 3
1. Primary sense	62/ 6.2%	-	-	-	62/ 6.2%
2. Cover	152/ 15.2%	-	-	-	152/ 15.2%
3. Personal space	30/ 3%	4/ 0.4%	-	-	34/ 3.4%
4. Direction	-	-	-	2/ 0,2%	2/ 0.2%
5. Pervasion	-	-	100/ 10%	-	100/ 10%
Total 1: Concrete senses	244/ 24.4%	4/ 0.4%	100/ 10%	2/ 0.2%	350/ 35%
6. Temporal sequence	-	502/ 50.2%	-	1/ 0.1%	503/ 50.3%
7. Temporal consistency	-	38/ 3.8%	-	-	38/ 3.8%
8. Temporal persistence	-	-	-	2/ 0.2%	2/ 0.2%
9. Lateness	-	3/ 0.3%	-	1/ 0.1%	4/ 0.4%
10. Submission	3/ 0.3%	-	-	-	3/ 0.3%
11. Annoyance	18/ 1.8%	18/ 1.8%	-	-	36/ 3.6%
12. Truth	-	-	-	2/ 0.2%	2/ 0.2%
13. Distributive quantity	-	-	62/ 6.2%	-	62/ 6.2%
Total 2: Abstract senses	21/ 2.1%	561/ 56.1%	62/ 6.2%	6/ 0.6%	650/ 65%
Grand total: Total 1 + 2	265/ 26.5%	565/ 56.5%	162/ 16.2%	8/ 0.8%	1,000/ 100%

As shown in Table 4, ***po*** manifests a total of 13 senses: 5 (from 1 to 5) pertain to physical space, whereas 8 (from 6 to 13) code relations in non-

physical space. As to the relationship between concrete vs. abstract senses (35%, see Total 1 vs. 65%, see Total 2), it gives preference for multiple extensions away from physical space in the semantic structure of the preposition (cf. concrete vs. abstract senses of ***žemiau*** in Table 2; for more ideas on the influence of the neighbouring or contrasting categories on the extension of a category, see Lakoff 1982: 17; cf. Taylor 1988: 309).

Moreover, according to the usage instances from the CCLL, ***po*** governs four case-forms expressing the relations of nouns: the Genitive and the Accusative, or central cases, and the Dative and the Instrumental, or peripheral cases. As shown in Table 4, each case is associated with a different group of senses. The Instrumental seems to be the most dominant when the preposition is used in a concrete sense: 24.4% of the instances (see Total 1), as compared with as few as 2.1% (see Total 2) when it appears in an abstract sense, making a grand total of 26.5%. The Genitive and the Dative, on the other hand, are employed in as few as 0.4% and 0.2% of the instances with ***po*** in a concrete sense (see Total 1). However, the Genitive constitutes as many as 56.1% of the examples illustrating abstract senses, as compared with the Dative appearing in as few as 0.6% of the instances (see Total 2). Thus, the Genitive is the most ubiquitous case, whereas the Dative seems to be the least employed and currently has the connotation of an archaic usage (see the Grand total of 56.5% and 0.8%, respectively). The Accusative is used more frequently with the preposition in physical space (10%, see Total 1), as compared with non-physical space (6.2%, see Total 2), which constitutes a grand total of 16.2% of the instances in the compiled corpus.

Table 4 also gives some clue to the senses of ***po*** when it is combined with more than one case-form. For instance, in almost all the concrete senses, as displayed in Total 3, the preposition goes with a noun in one case, the Instrumental (the primary sense: 6.2%, cover: 15.2%), the Accusative (pervasion: 10%), or the Dative (direction: 0.2%). However, in the personal space sense, which also pertains to the physical domain, both the Instrumental and the Genitive may be found (3% and 0.4% of the instances, respectively, see Total 3). As to the usage of ***po*** related to non-physical space, it manifests slightly different tendencies (see Total 3): some senses require a noun in one case, i.e. the Instrumental (submission: 0.3%), the Genitive (temporal consistency: 3.8%), the Accusative (distributive quantity: 6.2%), or the Dative (0.2% for both temporal persistence and truth). However, there are four senses when the preposition governs two cases, for instance, personal space and annoyance: the Instrumental (3% and 1.8%) and the Genitive (0.4% and 1.8%), whereas temporal sequence and lateness: the

Genitive (50.2% and 0.3%) and the Dative (0.1% for each of the two senses). Thus, the Genitive combines more frequently with ***po*** than the remaining cases. However, when a particular usage of the preposition prompts for two cases, the Genitive prefers senses associated with non-physical space (annoyance, temporal sequence, and lateness vs. personal space in the physical domain). It must be acknowledged that such a preference for one case over another may indicate stylistic nuances characteristic of some text types, or the author's inclination to employ one or another case-form depending on the context of communication.

The semantic peculiarities of the Lithuanian ***po***, as attested by the usage instances from the CCLL, are discussed in the following manner. First, the primary sense is established, and its extensions in physical and non-physical domains are examined. Next, motivated relationships between the senses, or use types, that differ in status are emphasized in the form of a network.

3.2.1 Defining the primary sense

3.2.1.1 Key components of the proto-scene

Figure 4 offers an approximate depiction of the conceptual spatial relation between the two entities, as coded linguistically by the Lithuanian ***po*** and represented in the proto-scene by the diagrammatic configuration between the sphere (F) and the dark line (G).

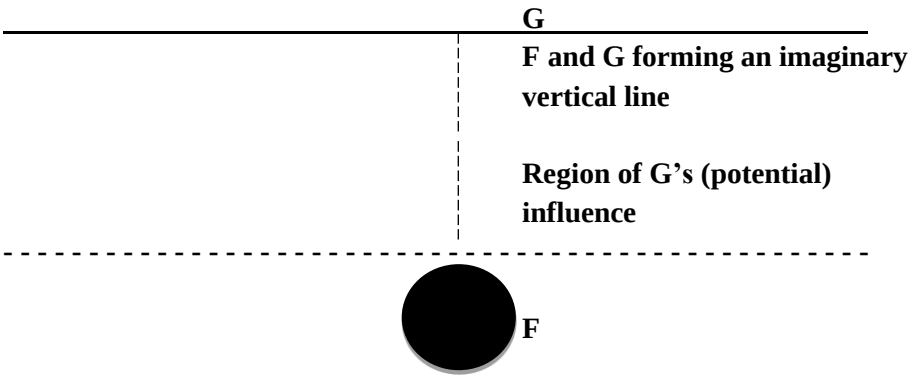


Figure 4. Proto-scene for spatial scenes with ***po***

The CCLL data attest to several features of the proto-scene expressed by the preposition under study. First, the schematic construal stipulates that it is prerequisite for F to be located lower than G in Euclidean space along the negative value of the vertical axis, e.g.:

(48) *Bėgiai nėrė po vartais (…)*
Railway.NOM.PL go.PST.3PL **po** gate.INS.PL
'The railway went **under** the gate (…)'

The example shows that *vartai* 'gate', which is implicitly referred to by means of background world knowledge, becomes G, hence a bold line in Figure 4. Like in the utterances with ***žemiau***, whether this entity is porous or non-porous, made up of several elements or constitutes a continuous mass, is irrelevant for the proto-scene. F, or *bėgiai* 'railway', the geometric parameters of which bear no significance during the process of conceptualization, designates the boundaries of vertical space, coinciding with its bottom at the lower end. However, this proto-scene is different from the spatial scenes of the primary sense of ***žemiau*** in the successive arrangement of the entities along the imaginary vertical axis; hence the vertical punctured line in Figure 4. In other words, ***po*** must entail F's concentrated location with respect to G, whereas in case of ***žemiau***, F's location below G acting as a geometric reference is not clearly specified.

Also, as attested by the CCLL, the conceptual spatial relation denoted by ***po*** in the primary sense does not necessarily imply contact between the entities. Thus, the preposition seems acceptable with units of measurement, as in the utterance *du metrai* ***po*** *vandeniu* two metre-NOM.PL **po** water-INS.SG 'two metres **under** water'. However, when gradable distance is manifested by such modifiers measuring the extent of space as *šiek tiek*/*vos* 'just/slightly', *gerokai/žymiai* 'considerably', ***po*** seems to avoid such a company, which is not the case with ***žemiau***, a seemingly close synonym of the preposition under study (see also Hawkins 1984: 367-373).

On the other hand, contiguity between the entities might as well exist, as attested by the CCLL utterance below. However, since *akys* 'eyes' and *kakta* 'forehead' constitute part of a human face, the absence of distance is more like the consequence of context, e.g.:

(49) *(…)* ***po*** *kakta smengančios (…) akys (…)*
Po forehead.INS.SG sink.PRS.PA.NOM.PL.F eye.NOM.PL
'(…) eyes sinking **under** the forehead (…)'

In the example above, eyes acting as F appear straight beneath the forehead (G), stipulating that such succession is extremely important (cf. the primary sense of ***žemiau*** when F is lower than but not necessarily directly under G, which is further strengthened in the geography sense of the preposition). More utterances illustrating such a geometric relation between the entities are given below:

(50) ***Po*** *ja [lentele] sėdėjo (…) moteriškė (…)*
Po 3.INS.SG.F [tablet.IS.SG] sit.PST.3SG woman.NOM.SG

‘(…) a woman was sitting **under** [the tablet] (…)’

(51) *Ant sienos laikrodis, o **po** laikrodžiu – kažkas panašaus į telefoną (...)*
On.PREP wall.GEN.SG clock.NOM.SG whereas.CONJ **po** clock.INS.SG something.NOM similar.GEN.SG.M to.PREP telephone.ACC.SG
‘On the wall there is a clock, whereas **under** the clock there is something similar to a telephone (…)’

The arrangement of F and G in other examples still implies that the entities are directly under each other on the vertical line. For instance, one of the ways for medicine to get into the human body is through an arm attached to a drip which hangs directly over it, while a computer code located beneath the photograph possibly gives information about it:

(52) *(...) [ranka] **po** lašeline su įsmeigta adata venoje (...)*
[arm.NOM.SG] **po** drip.INS.SG with.PREP stab.PST.PP.INS.SG.F needle.INS.SG vein.LOC.SG
‘(…) [the arm] **with** a drip with a needle in the vein (...)’

(53) ***Po** fotografija prilipintas kompiuterinis kodas (...)*
Po photograph.INS.SG attach.PST.PP.NOM.SG.M computer-NOM.SG.F code.NOM.SG
‘A computer code was attached **under** the photograph (…)’

When ***po*** and ***žemiau*** can be used interchangeably, resulting in seemingly unexplainable variations, they in fact evoke different construals of the same spatial scene. Prepositional coding relates to how constellations of objects are seen in the world, and it depends on the language user which of them to enable during the process of construal, cf.:

(54) *Sukryžiavau rankas **žemiau** krūtinės/**po** krūtine.*
Cross.PST.1SG arm.ACC.PL **žemiau** chest.GEN.SG / **po** chest.INS.SG
‘I crossed my arms **below**/**under** the chest.’

So, ***žemiau*** reflects the so-called objective truth, i.e. merely the spatial configuration of the two discontinuous objects or what Šeškauskienė (2001, 2004) describes as *subspaces*, when one subspace is conceptualized as being lower than but not directly under the other on the vertical measurement line. The features of F and G are also important, for both refer to the human body acting as the third reference object. ***Po***, on the other hand, highlights the successive arrangement of the entities on the negative value of the vertical axis. Therefore, the importance of negative evidence should not be underestimated, either. By way of comparison, consider the example below, illustrating the same type of G in terms of its dimensionality (a two-

dimensional object, viewed as a line passing through a certain point, as the chest in the previous utterance), the same kind of configuration between F and G (perpendicular, as in the previous example with the chest), but different types of entities (arms and the chest belong to the human body, whereas a person and a picture are two discrete entities):

(55) *Atsisėdau **po** paveikslu/*__**žemiau**__ paveikslo (...)*
RFL.sit.PST.1SG **po** picture.INS.SG/*__**žemiau**__ picture.GEN.SG
'I sat **under**/*__***below***__ *the picture (...)*'

Thus, in addition to an inherent feature of negative verticality, the successive configuration of contact-free or contiguous F and G defines the proto-scene involving the conceptual spatial relation denoted by the Lithuanian ***po*** as used with the Instrumental case. Moreover, viewing the spatial scenes may entail both intrinsic and relative frames of reference; in other words, the vantage point may be external or involve the coincidence of the main reference point and G' salient features, while axes and angles are projected on the basis of its geometry. In the present analysis, this proto-scene will be referred to as the typical, most representative, or primary sense of ***po*** + INS. On the basis of the CCLL data, the typicality of this sense is mainly attested by two criteria: (1) the physical aspect and (2) the least elaborate content in comparison with the other senses of the preposition. Both of these parameters will be discussed in more detail in the forthcoming analysis.

3.2.1.2 Types of F and G

As far as the frequency of the Lithuanian ***po*** in the primary sense is concerned, it is illustrated in Table 4, giving 6.2% of the instances in the CCLL data sample, in comparison to the other concrete senses (cover – 15.2%, pervasion – 10%, personal space – 3.4%, direction – 0.2%). Table 5 below illustrates different types of F and G characteristic of this prepositional meaning.

Table 5. Types of F and G in the primary sense of ***po*** (absolute and relative frequencies)

G / F	Human body	Concrete object	Total 2
Human body	8/12.9%	17/27.4%	25/40.3%
Concrete object	20/32.3%	14/22.6%	34/54.9%
Action/process	1/1.6%	2/3.2%	3/4.8%
Total 1	29/46.8%	33/53.2%	62/100%

As seen from Table 5, the physical aspect of the primary sense is determined by the arrangement of F and G in physical space, which is determined by the nature of the two entities. In the majority of the usage cases in the CCLL sample (53.2%, see Total 1), G designates any concrete object, whereas in the remaining instances (46.8%, see Total 1), it is a person or human morphology that acts as G located straight above it, forming a vertical line. Even though human body parts in the position of G come as the second choice, selecting them for spatial scenes proves the importance of reasoning about the world on the basis of bodily experience (Gibbs 2006: 9; Rohrer 2007: 25-47), which is well attested by studies of conceptual metaphor (Lakoff and Johnson 1980; Lakoff 1987; Kövecses 2010).

However, the physical aspect of the primary sense of ***po*** is manifested not only when concrete objects, including people, feature as G, but also due to the nature of F. As regards the latter entity, it displays similar tendencies, because concrete objects as its denotata account for the largest number of the instances, while human morphology is the second choice (54.9% and 40.3%, respectively, see Total 2). Actions/processes, the location of which is determined with reference to a person or another concrete object, are encountered in as few as 4.8% of the corpus instances (see Total 2).

Various parts of the human body feature as G in the CCLL with ***po*** in the primary sense. For instance, *kakta* 'forehead', *akys* 'eyes', *blakstienos* 'eyelashes', *užpakalis* 'buttocks', etc. are some of the typical examples of the entity in the proto-scene under study. The position of F may be taken by *akys* 'eyes', *kumščiai* 'fists', *rankos* 'arms' or even the whole body, which constitutes 12.9% of the instances in Table 5. There are also human body parts requiring G of which they constitute an integral part; however, the successive F and G configuration along the vertical axis is of utmost importance, e.g.:

(56) *(...)* ***po*** *jomis [akimis] atsirado apdribę pilki maišeliai.*

Po 3.INS.PL.F [eye.INS.PL] appear.PST.3PL sink.PST.PA.NOM.PL.M grey.NOM.PL.M bag.DIM-NOM.PL

'(…) grey bags appeared **under** the sunken eyes.'

(57) *Viena ranka prispausta duobutėje **po** krūtine (…)*

One.NOM.SG.F hand.NOM.SG press.PST.PA.NOM.SG.F hollow.DIM.LOC.SG **po** chest.INS.SG

'One hand pressed against a hollow **under** the chest (…)'

The amply used *kojos* 'legs' also belongs to G's denotata, combining with such inanimate entities as *granitas* 'granite', *cementas* 'cement', *akmenys* 'stones', *pamatas* 'footing', *laiptai* 'staircase', *skersinis* 'stave', *kilimas* 'carpet', *žvyrkelis* 'gravel road', *kelias* 'road' in the corpus. Such a combination of the entities would not be possible with ***žemiau***, which requires F's less concentrated contact-free location with respect to G, e.g.:

(58) *(…) *__žemiau__ kojų/__po__ kojomis plikas cementas, o ne purus kilimas.*

***Žemiau** foot.GEN.PL/**po** foot.INS.PL bare.NOM.SG.M cement.NOM.SG but.CONJ not.NEG fluffy.NOM.SG.M carpet.NOM.SG

'(…) bare cement, but not a fluffy carpet, ***below**/**under** the feet.'

As seen from the example above, ***po*** *kojomis* means under the bottom part of one's feet, not legs. When G is conceptualized as a two-dimensional surface, the usage of ***žemiau*** is inappropriate, because this preposition requires G viewed as a line passing through a certain point (e.g. *jūra **žemiau** kelių* sea-NOM.SG **žemiau** knee-GEN.PL 'the sea **below** the knee level').

Various other inanimate entities among F's denotata (32.3%, see Table 5) should also be taken into consideration so as to give a broader picture of the primary sense of ***po*** when employed with people or human body parts as G, as in the following example where straight underneath some people there is swirling water:

(59) *Žemai **po** mumis (...) verpetavo vanduo (...)*

Down below.ADV **po** 1PL.INS swirl.PST.3SG water.NOM.SG

'Down below us (...) water was swrling (...)'

The usage of the preposition with verbs denoting action, such as whistling or murmuring, and *nosis* 'nose' as G renders another frequent combination of the entities directly under each other. Since the sound produced is almost inaudible under these circumstances, such expressions usually carry a negative connotation during the exchange of information:

(60) *(...) tipelis švilpauja sau **po** nosim Keto Stivenso dainas (...)*

Bloke.DIM.NOM.SG whistle.PRS.3SG 3.DAT.SG.M po nose.INS.SG Cat.GEN.SG Stevens.GEN.SG song.ACC.PL

‘(…) the bloke whistles Cat Stevens’ songs **under** his nose (…)’

In addition to the CCLL utterances above, there are also examples when other concrete objects function as G. First of all, the successive location of people or human body parts is determined in this way (27.4%, see Table 5). *Dangus* ‘sky’, *skliautas* ‘celestial sphere’, *žvaigždžių spiečius* ‘swarm of stars’, or *žvaigždės* ‘stars’, when combined with this type of F, constitute quite a number of instances with ***po***:

(61) *(...) Lukas gimė **po** (...) žvaigždžių spiečiumi.*
Lukas.NOM.SG born.PST.3SG **po** star.GEN.PL swarm.INS.SG
‘(…) Luke was born **under** a swarm of stars (…)’

Žvaigždžių/meteorų lietus ‘shower of stars/meteors’ are also among the CCLL examples in the present analysis:

(62) *Prie šilto tėvo šono prisiglaudęs. **Po** žvaigždžių lietumi.*
Near.PREP warm.GEN.SG.M father.GEN.SG side.GEN.SG snuggle.PST.PA.NOM.SG.M **po** star.GEN.PL rain.INS.SG
‘Snuggling up against the warm father. **Under** a shower of stars.’

However, when a concrete object, for instance, *stiklinė* ‘a glass’, *frontonas* ‘a gable’, *karnizas* ‘a cornice’, *atbraila* ‘a ledge’, etc., is used as G, a wide range of concrete objects may also function as F situated directly under it, which makes 22.6% of the instances in the compiled corpus (see Table 5), e.g.:

(63) *Landa dešinėje, **po** atbraila, – parodė Gupka.*
Hole.NOM.SG right.LOC **po** ledge.INS.SG show.PST.3SG Gupka.NOM.SG
‘The hole is on the right, **under** the ledge, – showed Gupka.’

(64) *(...) **po** frontonu buvo lentelė su išraižytais žodžiais.*
Po gable.INS.SG be.PST.3SG tablet.DIM.NOM.SG with.CONJ inscribe.PST.PP.INS.PL.M word.INS.PL
‘(…) there was a tablet with inscribed words **under** the gable.’

Interestingly, concrete entities as G when combined with ***po*** in the primary sense can also take F denoting processes/actions (3.2% of the instances, see Table 5). However, objects with a dynamic element do not affect the interpretation of the prepositional meaning. In other words, what remains important is the successive arrangement of F and G along the negative value of the vertical line, e.g.:

(65) *(...) raganius sugebėjo kilstelėti vielas ir spjovė **po** jomis.*
Magician.NOM.SG manage.PST.3SG lift.INF wire.ACC.PL and.CONJ spit.PST.3SG **po** 3PL.INS
‘(…) the magician uplifted the wires and spat **under** them.’

Thus, in the light of the major components of the proto-scene involving the conceptual relation designated by the Lithuanian ***po***, there have been distinguished various types of contact-free or contiguous F and G, both successively arranged along the negative value of the vertical line (cf. the spatio-geometric content of ***žemiau***, when no such concentrated location of F is required). The typicality of the primary sense is attested by the preference for a concrete type of F and G, including the human body, as well as the least elaborate content in comparison with the other senses of the preposition. Further in the analysis, it will be shown how less typical meanings are related to the primary sense by exploiting and transforming it in different ways. First, ***po*** as confined to concrete senses will be discussed, and then the analysis will proceed to its more abstract senses.

3.2.2 Cover sense

The cover sense of the Lithuanian ***po***, employed with the Instrumental case in as many as 15.2% of the CCLL instances (see Table 4), is the most frequent in the physical domain (cf. the primary sense – 6.2%, pervasion – 10%, personal space – 3.4%, direction – 0.2%). Although its schematic representation is almost the same as that for the primary sense, the semantic elements manifest both similarities and differences and, therefore, are discussed in the forthcoming analysis.

3.2.2.1 Key elements

Figure 5 offers the typical graphical representation of the conceptual spatial relation between the sphere (F) and the dark line (G), as coded linguistically by the Lithuanian ***po*** and represented in the cover sense.

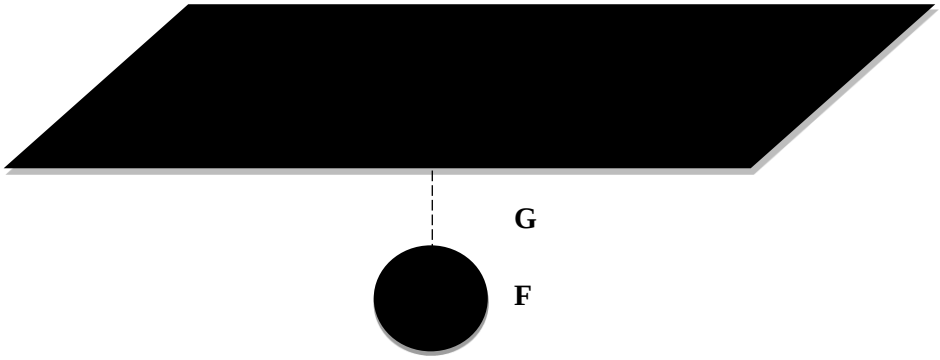


Figure 5. Spatial scene in the cover sense of ***po***

As shown by Figure 5, the cover sense of the preposition demands that the entities still preserve the spatial configuration characteristic of the primary sense, i.e. F must be located lower than and directly under G in Euclidean space along the vertical axis (see the vertical punctured line), e.g.:

(66) *Gulėdamas **po** antklode, Virginijus įsiklausė.*
Lie.CVB.SG.M **po** blanket.INS.SG Virginijus.NOM.SG listen.PST.3SG
'Virginijus kept his ears open lying **under** the blanket.'

(67) *Nuo spintelės paėmiau peilį ir sviedžiau **po** stalu.*
From.PREP cupboard.DIM.GEN.SG take.PST.1SG knife.ACC.SG and.CONJ throw.PST.1SG **po** table.INS.SG
'I took a knife from the cupboard and threw it **under** the table.'

In the CCLL examples above, a blanket and a table become G, whereas Virginijus and a knife, acting as F, are situated straight under them and designate the boundaries of vertical space, coinciding with its bottom at the lower end. In other words, the spatial arrangement of the two entities presupposes the extension of space along the vertical line. Furthermore, like in the primary sense, contact between the entities or its absence does not play a major role, because it is a matter of context in the spatial scenes under investigation. For instance, a person under the blanket presupposes contiguity; however, the state of bordering between a knife and the table is ruled out altogether. The irrelevance of contact is clearly manifested by the absence of words denoting graded distance when ***po*** is used in this sense. However, what makes the most important element in the present semantic structure is functional (Vandeloise 1991, 1994), or extra-geometric (Coventry *et al.* 2001), interaction between the two contiguous or contact-

free entities situated along the vertical axis. In other words, G, which lends itself to being conceptualized as a two-dimensional object, is capable of potentially covering F, which is smaller or at least of the same size and situated directly under it. The utterances below illustrate how the preposition is used in two seemingly close, but in fact distinct senses, attesting to disparate states of affairs as construed by the language user, e.g.:

(68) *(...) ieško **po** kojomis tvirto pamato.*
[3.NOM.SG.F] search.PRS.3SG **po** foot.INS.PL solid.GEN.SG.M groundwork.GEN.SG
'(…) [she] searches for a solid groundwork **under** the feet.'

(69) *(...) įsivaizduoti Heleną: jos veidą **po** pudros sluoksniu (...)*
Imagine.INF Helen.ACC.SG 3.GEN.SG.F face.ACC.SG **po** powder.GEN.SG layer.INS.SG
'(…) to imagine Helen: her face **under** cosmetic powder (…)'

(70) *Mes (...) sėdam **po** paskubomis ištemptu skėčiu (...)*
1.NOM.PL sit.PRS.1PL **po** hasty.ADV stretch.PST.PP.INS.SG.M umbrella.INS.SG
'We (…) sit **under** an umbrella that was put up hastily (…)'

In example (68), the viewer conceptualizes F and G as successively arranged one after the other along the vertical line, G as a two-dimensional surface but smaller than F, so the usage of ***po*** entails the primary sense. The cosmetic powder (G) in example (69), on the other hand, implies total covering, for the true colour of Helen's face (F) is entirely concealed and, therefore, protection from sunshine is provided, hence total covering. Interestingly, the importance of the vertical axis is downgraded in the utterance, which signifies the relevance of only the successive arrangement of F and G, in addition to the size and dimensions of the latter entity. In example (70), the umbrella lends itself to the conceptualization of covering only if you look at a person from above, but not from another vantage-point. This type of functional interaction, which constitutes almost half of the instances with this sense of ***po***, will be called partial covering. Interestingly, the configuration of the entities along the vertical line is highlighted again. However, in both cases, as mentioned above, the change in the way that G affects F is determined by different parameters of the former object, namely, it must be conceptualized as a two-dimensional surface (e.g. a blanket, a table), which in some cases might gradually deviate from being straight for some or all of its length (e.g. a layer of cosmetic powder, an umbrella). Moreover, G must be larger than or at least of the same size as F in order to be able to provide (potential) cover. Last but not least, this large two-

dimensional surface must be parallel to F so as to be able to affect it in the aforementioned way, cf.:

(71) *Moteris sėdėjo **po** paveikslu.*
Woman.NON.SG sit.PRS.3SG **po** picture.INS.SG
'The woman was sitting **under** the picture.'

(72) *Kažkas rausva gulėjo ant šaligatvio **po** mano batu.*
INDEF.who.NOM pink.NOM.SG.F lie.PST.3SG on.PREP pavement.GEN.SG **po** 1SG.GEN shoe.INS.SG
'Something pink was lying on the pavement **under** my shoe.'

Example (71) illustrates the primary sense of the Lithuanian ***po*** because the picture as a two-dimensional entity hangs on the wall in a perpendicular manner as compared to the woman and, therefore, cannot provide cover for her. Example (72), on the other hand, manifests the cover sense of the preposition, for the position of the bottommost part of the shoe as a two-dimensional surface directly over something pink (F), presumably smaller in size, enables the shoe to completely conceal the thing, whether it is viewed from above or sideways.

However, even though the geometric parameters of G, such as its size and dimensions, are important, the internal structure of the entity still remains irrelevant. Thus, even though water and earth constitute continuous mass, only their two-dimensional top part metonymically participates in the process of conceptualization in the cover sense of ***po***:

(73) *(...) matęs, kaip ji <u>nugrimzdo</u> **po** okeanu.*
See.PST.PA.NOM.SG.M how.ADV 3.NOM.SG.F sink.PST.3SG **po** ocean.INS.SG
'(...) seeing how she <u>sank</u> **under** the ocean.'

(74) *(…) gynėjai būstinę įsirengė olose <u>giliai</u> **po** žeme (…)*
Defender.NOM.PL headquarter.ACC.SG RFL.set.PST.3PL cave.LOC.PL deep.ADV **po** ground.INS.SG
'(…) defenders set headquarters in caves <u>deep</u> under the ground (…)'

Moreover, as shown by the verb *(nu)grimzti* 'sink' and the adverb *giliai* 'deeply', contextual clues may also indicate that the hypothesis about covering is correct. Other verbs, for instance, *(pa)(si)kišti* 'put oneself/something under something', *slypėti* 'lurk', *dingti* 'disappear', *(pa)slėpti(s)* 'hide somebody/something/oneself', *(pa)lįsti* 'crawl under something', *lindėti/tūnoti* 'hide', *pasilenkti* 'crouch down', *gūžtis* 'cringe/crouch', *(pa)(si)brukti* 'thrust one's body part under the whole body', *(pa)laidoti* 'bury', should not be underestimated, either, e.g.:

(75) *(…) liepa, kurios šaknys buvo <u>palindusios</u> **po** pirkios pamatais.*

Lime-tree.NOM.SG which.GEN.SG root.NOM.PL bury.PRS.PA.NOM.PL.F **po** cottage.GEN.SG foundation.INS.PL
'(....) the roots of a lime-tree were buried **under** the foundation of the cottage.'

(76) *(...) fotografija, tūnanti (...)* ***po*** *celofano plėvele mažame albumėlyje (...)*
Photograph.NOM.SG lurk.PRS.PA.NOM.SG.F **po** cellophane.GEN.SG sheet.DIM.INS.SG small.LOC.SG.M album.DIM.LOC.SG
'(…) a photograph (…) lurking **under** a sheet of cellophane in a small album (...)

Adjectives, e.g. *neįskaitomas* 'undecipherable', *pakastas* 'buried', nouns, e.g. *užklotas* 'bedcover', *slėptuvė* 'hiding-place', also frequently appear with ***po*** to imply protection or shelter, especially in case of contiguity between F and G:

(77) *(...) stirti* ***po*** *tuo palaikiu užklotu (...)*
Freeze.INF **po** DEM.INS.SG.M thin.INS.SG bedcover.INS.SG
'(…) freeze under that thin bedcover (...)'

(78) *(...) šviesios akys neįskaitomos* ***po*** *ilgais kirpčiukais.*
Light.NOM.PL.F eye.NOM.PL NEG.decipherable.NOM.PL.F **po** long.INS.PL.M fringe.INS.PL
'(…) light eyes were undecipherable **under** a long fringe hair.'

Thus, a feature of negative verticality is not so important in the present semantic structure of ***po***, because there are cases when it becomes backgrounded (as in the utterance about somebody's face under cosmetic powder). What remains significant is the successive arrangement of the entities in the physical domain. However, it is also a shift in the size and dimensions of G that consequently determines functional interaction between the entities, which constitutes the key element of the cover sense of the Lithuanian ***po*** + INSTR, as derived from the primary sense. Ambrazas (2006: 298) claims that the same meaning is also characteristic of the prefix ***pa-*** (cf. *šuva* ***po*** *suolu* ***pa****lindo* dog-NOM.SG **under** bench-INS.SG go.PST.3SG 'the dog went **under** the bench'). On the basis of the CCLL data, this sense will be further discussed in terms of two closely interrelated criteria: (1) the physical aspect and (2) the frequency of instantiation in the corpus.

3.2.2.2 Types of F and G

In the cover sense, pertaining to total and partial cover, the Lithuanian ***po*** exhibits several types of F and G, the frequency of which is shown in Table 6.

Table 6. Types of F and G in the cover sense of ***po*** (absolute and relative frequencies)

G / F	Human body	Concrete object	Abstract entity	Total 2
Human body	8/5.3%	60/39.5%	–	68/44.7%
Concrete object	7/4.6%	65/42.8%	–	72/47.4%
Abstract entity	–	6/3.9%	3/2%	9/5.9%
Action/ process	–	2/1.3%	1/0.6%	3/2%
Total 1	15/9.9%	133/87.5%	4/2.6%	152/100%

As seen from Table 6, the physical aspect of the cover sense of the preposition in the CCLL data sample is mainly determined by the nature of G. In other words, in the majority of the instances (87.5%, see Total 1), it is a concrete entity, while in the remaining examples, it is either a person or human morphology and even an abstract object (9.9% and 2.6%, respectively, see Total 1) that is selected in the spatial scene signalling functional interaction. Actions/processes do not appear in the position of G in the compiled corpus, so they are not included in the table.

As regards types of F in the cover sense of ***po***, they manifest slightly different tendencies in Table 6. The human body and concrete objects statistically perform almost similarly (44.7% and 47.4%, respectively, see Total 2). Abstract entities, on the other hand, take the position of F in three times as many instances as actions/processes, but both types are in the significant minority, as compared with human morphology and other concrete objects (5.9% and 2%, respectively, see Total 2). However, neither abstract entities nor those with a dynamic element, when in spatial alignment with another object, affect the interpretation of the cover sense. What remains important is the successive arrangement of the entities and their

functional engagement. Types of F and G will be discussed further in more detail.

As seen in Table 6, G may be a person explicitly rendered by reference to different parts of the human body, e.g. *plaukai* 'hair', *kirpčiukai* 'hair fringe', *pakaušis* 'back of the head', *galva* 'head', *krūtis* 'breast', *nugara* 'back', etc., which is well illustrated in the following CCLL concordance lines with ***po***:

(79) *(...) paslepiant kitą veidą **po** geltonų siūlų plaukais.*
Hide.PRS.PA other.ACC.SG face.ACC.SG **po** yellow.GEN.PL.M yarn.GEN.PL hair.INS.PL
'(…) hiding the other face **under** the hair of yellow yarn.'

(80) *(...) pakišau **po** nugara pagalvę.*
Put.PST.1SG **po** back.INS.SG pillow.ACC.SG
'(...) I put a pillow **under** the back.'

The examples above also illustrate major types of F when human morphology functions as G. First of all, the location of other body parts, e.g. *liežuvis* 'tongue', *kojos* 'legs', *veidas* 'face', *akys* 'eyes', *rankos* 'arms', *plaštakos* 'hands', *širdis* 'heart', etc. is determined in this way (5.3%, see Table 6). Inanimate concrete objects as F, the location of which is determined with respect to the human body are also found in the corpus (4.6%, see Table 6). Among them, there is a wide range of things that a person is strong enough to carry, such as *skylamušis* 'stapler', *dienoraštis* 'diary'; however, *maišas* 'sack', *nešulys* 'something that you carry', and especially *rankinė* 'handbag' are among the most prevailing. In all of these utterances, *pažastys* 'armpits' function as G, which covers by exerting force or control over F located directly under but not vertically aligned with respect to it. However, the notion of force dynamics is applied only locally in contexts with humans, e.g.:

(81) *Brigitė (...) pasikiša **po** pažasčia savo plokščią rankinę.*
Brigitte.NOM.SG RFL.thrust.PRS.3SG **po** armpit.INS.SG RPOSS flat.ACC.SG.F bag.ACC.SG
'Brigitte (…) thrusts her flat bag **under** the armpit.'

As regards actions/processes or abstract entities as F, they do not tend to combine with people or human body parts as G at all, as shown in Table 6.

However, the physical aspect of the cover sense of the Lithuanian ***po*** is manifested not only when the human body is involved, but also when other concrete objects are employed as G. For instance, various types of artefacts, such as garments, e.g. *striukė* 'jacket', *manto* 'coat', *megztinis* 'sweater', *paltas* 'coat', *sijonas* 'skirt', *švarkas* 'jacket', *liemenė* 'waistcoat', *treningai*

‘sweatpants’, *kaklaraištis* ‘tie’, *rūbai* ‘clothes’, and even *batai* ‘shoes’, may refer to the denotata of the entity in question:

(82) *(...) banguojančius klubus **po** žalčio spalvos manto (...)*
Swing.PRS.PA.ACC.PL.M hip.ACC.PL **po** whipsnake.GEN.SG colour.GEN.SG coat.INS.SG
‘(…) hips swinging **under** a coat of a grass-snake colour (...)’

(83) *(...) pasimaukit **po** treningais ilgas kelnes (...)*
Put.IMP.2PL **po** sweatpant.INS.PL long.ACC.PL.F trousers.ACC.PL
‘(…) put on long trousers **under** the sweatpants (…)’

As shown by the CCLL examples above, the position of F is usually taken by various human body parts or other concrete entities, especially clothes. Abstract entities as well as objects with a dynamic element are not excluded, either, e.g.:

(84) ***Po** neišvaizdžiais rūbais (...) slepiasi gailestinga širdis.*
Po NEG.presentable.INS.PL clothes.INS.PL hide.RFL.PRS.3SG merciful.NOM.SG heart.NOM.SG
‘A merciful heart (…) hides **under** unpresentable clothes.’

(85) *Jaučiau triušio širdies plakimą **po** jo purvinu kaklaraiščiu.*
Feel.PST.1SG rabbit.GEN.SG heart.GEN.SG beat.ACC.SG **po** 3.GEN.SG.M dirty.INS.SG.M tie.INS.SG
‘I felt the beating of a rabbit heart **under** his dirty tie.’

In addition to garments, a wide range of other man-made things, for instance, bedclothes, such as *užklotas* ‘bedcover’, *antklodė* ‘wrap’, *čiužinys* ‘mattress’, *pagalvė* ‘pillow’, *patalai* ‘bedclothes’, etc., also frequently lend themselves to cover conceptualization. People or human body parts and other concrete entities are usually found in the position of F, e.g.:

(86) *Garbaną tau nukirpsiu ir (...) **po** pagalve ją pasikišiu.*
Lock.ACC.SG 2SG.DAT cut.FUT.1SG and.CONJ **po** pillow.INS.SG 3.ACC.SG.F RFL.put.FUT.1SG
‘I will cut your lock of hair and (…) put it **under** a pillow as a madman.’

(87) *(...) ko nesuvalgė, pasikišo **po** čiužiniais.*
What.GEN NEG.eat.PST.3SG RFL.put.PST.3SG **po** mattress.INS.PL
‘(…) [he] put what he could not eat **under** mattresses.’

Other entities functioning as G in combination with ***po*** in the cover sense refer to rather miscellaneous objects. For instance, they may subsume such denotata as *perukas* ‘wig’ in order to conceal baldness in order to improve one’s appearance:

(88) *(...) ką išvydau **po** peruku, vargu ar buvo panašu į jo kadaise gražų veidą (...)*

What.ACC see.PST.1SG **po** wig.INS.SG hardly.ADV be.PST.3SG similar.ADV to.PREP 3.GEN.SG.M once.ADV attractive.ACC.SG.M face.ACC.SG

'(…) what I saw **under** the wig could hardly resemble his once attractive face (…)'

Even though human morphology usually becomes F in such cases, abstract entities cannot be ruled out, either, e.g.:

(89) *(…) familiarumas – kas slypi **po** šita kauke? – negaliu pakęsti keistų jos manierų.*

Familiarity.NOM.SG what.NOM hide.PRS.3SG **po** DEM.INS.SG.F mask.INS.SG NEG.manage.PRS.1SG tolerate.INF strange.GEN.PL.F 3.GEN.SG.F manner.GEN.SG

'(…) familiarity – what hides **under** this mask? – I can't tolerate her strange manners.'

Viršelis 'front cover', *oda* 'leather', *celofano plėvelė* 'cellophane', *stiklas* 'glass' constitute another group of human-made things capable of providing (potential) cover for inanimate objects, especially pictures, photographs, or texts, e.g.:

(90) *(…) fotografija su autografu **po** musių nutupėtu stiklu.*

Photo.NOM.SG with.PREP autograph.INS.SG **po** fly.GEN.PL sit.PST.PP.INS.SG.M glass.INS.SG

'(…) a photo with an autograph **under** a fly-stained glass (…)'

A variety of small articles found in anybody's households, e.g. *tvarsčiai* 'dressing for a wound', *rankšluostis* 'towel', among many others, can also be used as covers for various concrete entities and, therefore, take the position of G, as shown in the following example from the corpus:

(91) ***Po** krūtinę juosiančiais tvarsčiais sugurgsėjo kraujas.*

Po chest.ACC.SG girdle.PRS.PA.INS.PL.M dressing.INS.PL rumble.PST.3SG blood-NOM.SG

'Blood rumbled **under** the dressing which girdled the chest.'

The idea of cover attached to ***po*** when it combines with *šluota* 'broom' is reinforced by the usage of a very stable Lithuanian expression *kaip pelė **po** šluota* (lit. 'like a mouse **under** a broom'), metaphorically referring to someone being silent in hiding. Interestingly, only the lower part of a broom as a two-dimensional entity is metonymically implied during the process of conceptualization.

Finally, lexemes referring not only to relatively small man-made entities capable of covering, as outlined above, but also to various types of larger constructions, such as houses, constitute another group of G's denotata, hence the usage of *namas* 'house', *tvartas* 'stall', *gryčia* 'cottage',

priešsvirnis ‘granary’ or different parts of a building, e.g. *rūsys* ‘basement’, *pamatai* ‘house foundation’, *grindys* ‘floor’ in the corpus, e.g.:

(92) *Danielius pajuto – jie apačioje,* ***po*** *namu, po lova (…)*
Daniel.NOM.SG feel.PST.3SG 3.NOM.PL.M underneath.LOC.SG **po** house.INS.SG
‘Daniel felt they are below, **under** the house, under his bed.’

Other entities, for instance, *žemė* ‘ground’, *šaknys* ‘roots’, can also be employed as F with ***po*** in the cover sense, e.g.:

(93) *Ir žemė* ***po*** *namu visa prisigėrus. – Ko prisigėrus, ko? - To.*
And.CONJ ground.NOM.SG **po** house.INS.SG entire.NOM.SG.F RFL.soak.PST.PA.NOM.SG.F what.GEN soak.PST.PA.NOM.SG.F what.GEN DEM.GEN.SG.M
‘And the ground **under** the house is soaked. – Soaked with what? – With that.’

The usage of *slėptuvė* ‘shelter/hiding place’ in the position of F in the utterance of the above type might as well corroborate the hypothesis of covering, e.g.:

(94) *Pas Milinionius* ***po*** *grindimis buvo slėptuvė.*
At.PREP Milinioniai.ACC.PL **po** floor.INS.PL be.PST.3SG hiding-place.NOM.SG
‘There was a hiding place **under** the floor in the Milinioniai home.’

Interestingly, the CCLL attests to G not only as a solid object capable of covering, which has been the case so far, but also as a composite entity without affecting the meaning of the preposition, e.g.:

(95) *(…) guli palaidota* ***po*** *lubų nuolaužomis, po stogo dangos gabalais, virtuvės rykais.*
Lie.PRS.3SG bury.PST.PP.NOM.SG.F **po** ceiling.GEN.SG fragment.INS.PL under roof.GEN.SG piece.INS.PL kitchen.GEN.SG utensil.INS.PL
‘(…) she was lying buried **under** pieces of ceiling debris, roof fragments, kitchen utensils.’

In addition to artefacts, from relatively small to larger entities, as exemplified above, some phenomena of the physical world, such as features and products of the earth, for instance, *ledas* ‘ice’, *akmuo* ‘stone’, and even plants forming a low growth on stones, trees, or walls, e.g. *kerpės* ‘lichen’, *samanos* ‘moss’, may also illustrate G in combination with ***po*** in the cover sense. Both animate and inanimate objects take the position of F, as in the following CCLL utterances:

(96) *(…)* ***po*** *ledu sušąlusias varles (…)*
Po ice.INS.SG freeze.PST.PP.ACC.PL.F frog.ACC.PL

‘(…) frogs frozen **under** the ice (…)’

(97) *(...) sraigtelius, varžtelius, spyruoklikes ir paslėptų **po** kerpėm ir samanom.*
Cog.DIM.ACC.PL screw.DIM.ACC.PL spring.DIM.ACC.PL and.CONJ hide.IRR.3 **po** litchen.INS.PL and.CONJ moss.INS.PL
‘(…) cogs, screws, springs, all in small sizes, and hidden **under** lichen and moss.’

If all the denotata of G capable of covering have been solid or composite objects so far, illustrating a non-porous type of space, there are also examples manifesting a porous type of space typically extended along the vertical axis. Consider the following concrete entities in the position of G: *vanduo* (‘water’), *vandenynas* (‘ocean’), *smėlis* (‘sand’), *durpės* (‘peat’), *dumblas* (‘sludge’), *žemė* ‘ground’, only the surface of which is metonymically emphasized during the process of conceptualization. Such G is capable of submerging people or various other animate or inanimate objects functioning as F, e.g.:

(98) *(...) smilgos (...) **po** sniegu praradusios įprastą rausvumą (...)*
Bentgrass.NOM.PL **po** snow.INS.SG loose.PST.PA.NOM.PL.F usual.ACC.SG.M pinkness.ACC.SG
‘(…) bentgrass which lost its usual pinkness **under** snow (…)’

(99) *Šernas lindėjo (...) klebonijos klojime **po** durpėmis.*
Šernas.NOM.SG hide.PST.3SG parsonage.GEN.SG barn.LOC.SG **po** peat.INS.PL
'Šernas was hiding **under** peat in the barn of the parsonage.’

In all the examples cited so far, the distinct element in the cover sense of ***po*** is concealing F or its part completely from sight due its location directly under G. Therefore, G must be conceptualized as larger and encompassing F, which is smaller or at least of the same size. Moreover, as shown by the CCLL examples, all the denotata of the entities are porous or non-porous objects, referring both to animate or inanimate entities.

However, as noted in the discussion of the key elements of the sense, the usage of the Lithuanian preposition is also possible when there is only partial cover due to G’s extending over F only from above, but not sideways. The utterances manifesting the types of entities in this case will be shortly dealt with further. To start with, no human morphology features as G in the CCLL with ***po*** in partial cover (cf. total cover). However, there are some types of man-made entities with this functional outcome. First, various pieces of furniture, e.g. the amply used *krėslas* ‘chair’, *stalas* ‘table’, *suolas*, etc., constitute a prolific group among the instances under examination:

(100) ***Po** juo [krėslu] susirangiusi miegojo katė.*

Po 3.INS.SG.M [chair.INS.SG] curl.PST.PA.NOM.SG.F sleep.PST.3SG cat.NOM.SG

'A cat was sleeping curled up into a ball **under** it [a chair].'

(101) *(...) stovėjau **po** žemu staleliu (...)*

Stand.PST.1SG **po** low.INS.SG table.DIM.INS.SG

'(…) I was standing **under** a low small table (…)'

Among the utterances with pieces of furniture capable of partially covering a person or an object, there are also expressions with *baras* 'bar' and *krosnis* 'furnace' employed as G. The usage of these nouns in the Instrumental case with ***po***, which resembles the Locative case, is rather archaic and no longer found in contemporary Lithuanian or only sporadically appears in certain dialects (DLL). However, the idea of covering attached to the preposition still accounts for such instances as.:

(102) *(...) laiko juos **po** baru skardinėje nuo biskvitų.*

Keep.PRS.3SG 3.ACC.PL.M **po** bar.INS.SG tin.LOC.SG from.PREP cookie.GEN.PL

'(…) [he] holds them **under** the bar in the cookie tin can.'

(103) *(...) jį rado tėvas ir (...) kyštelėjo **po** krosnim.*

3.ACC.SG.M find.PST.3SG father.NOM.SG and.CONJ thrust.PST.3SG **po** furnace.INS.SG

'(…) the father found it and (…) thrust it **under** the furnace.'

Some other interesting denotata illustrating the furniture-type of G include *lempa* 'lamp' or *lempos gaubtas* 'lampshade'. The field of light or heat that such an object radiates may be conceptualized as encompassing the entities below it and, therefore, providing a potential cover for them. The hypothesis of the presence of this function in the semantics of the preposition is supported by such verbs as *bruktis* 'thrust oneself' and *spraustis* 'squash/squeeze oneself in' used as contextual clues to refer to an action of pushing suddenly or violently in a specified direction for the purpose of being illuminated or heated, e.g.:

(104) *Žmonės <u>spraudėsi</u> (...) tamsoje **po** šildomosiomis lempomis.*

Person.NOM.PL squeeze.RFL.PST.3PL dark.LOC.SG **po** heat.PRS.PP.INS.PL.F lamp.INS.PL

'People were squeezing (…) in the dark **under** heating lamps.'

The entities functioning as F with pieces of furniture as G usually refer to people, pets, and various inanimate objects. However, abstract entities have also been found in the CCLL data:

(105) *(...) tikrovės ratilas mažo, <u>brukosi</u> **po** skardiniu elektros lemputės gaubtu (...)*

Reality.GEN.SG halo.NOM.SG diminish.PST.3SG thrust.RFL.PST.3SG **po** tin.INS.SG.M electricity.GEN.SG lamp.DIM.GEN.SG shade.INS.SG

'(…) the halo of reality was getting smaller, thrusting **under** a tin lampshade (…)'

(106) *Rūpesčiai nukrito **po** stalu.*

Worry.NOM.PL drop.PST.3SG **po** table.INS.SG

'Worries dropped **under** the table.'

Among other Gs, there are parts of buildings which typically refer to concaved surfaces, hence combinability with the amply used *stogas* 'roof', *skliautas* 'hollow and curved surface', *arka* 'arc', or other man-made constructions, such as *prieplauka* 'wharf', *tiltas* 'bridge', featuring as landmarks, while humans and/or inanimate entities act as F, e.g.:

(107) *Mes esame **po** trikampiu stogu... Virš jo dangus.*

1.NOM.PL be.PRS.1PL **po** triangle.INS.SG.M roof.INS.SG above.PREP 3.GEN.SG.M sky.NOM.SG

'We are **under** a triangular roof… Above it there is the sky.'

(108) *(...) nutapsėjo atgal **po** tamsia tilto arka.*

Patter.PST.3SG backwards.ADV **po** dark.INS.SG.F bridge.GEN.SG arc.INS.SG

'(…) [he] went pit-a-pat **under** the dark arc of the bridge.'

In addition to the constituent parts of buildings and a wide range of pieces of furniture, there is a variety of other objects employed with ***po*** to denote partial cover, as in the CCLL utterance below:

(109) *[Mokytojas] lindėdavo (...) **po** pirmininko mašinėlės pilvu.*

[Teacher.NOM.SG] lie.HAB.PST.3SG **po** chairman.GEN.SG car.DIM.GEN.SG belly.INS.SG

'[The teacher] would lie **under** his own or the chairman's car.'

In all the utterances illustrating the cover sense of the preposition so far, the semantic element of function is enabled due to the spatial alignment and geometric features of G. However, there also are examples illustrating cover, when F exerts influence over G. *Ugnis*/*laužas* 'fire/heat', which are capable of providing heat for cooking food, constitute the F's usual denotata in this case, e.g.:

(110) *(...) **po** jais [katilais] dieną naktį ūžavo ugnis (...)*

Po 3.INS.SG.M [kettle.GEN.PL] day.ACC.SG night.ACC.SG blaze.PST.3SG fire.NOM.SG

'(…) **under** them [kettles] the fire was blazing day and night.'

In addition to artefacts, from relatively small to larger objects, as exemplified above, some entities of the physical world, such as various

plants, e.g. *krūmai* ‘bush’ or the amply used *medžiai* ‘trees’, may provide shelter and protection by covering. Interestingly, the language user does not conceptualize F to be situated under the roots of plants, but rather under their branches or leaves (see the principle of *tolerance* in Herskovits 1988: 273):

(111) *(...) buvo tas viedras **po** krūmu?*
Be.PST.3SG DEM.NOM.SG.M bucket.NOM.SG **po** bush.INS.SG
‘(…) was there a bucket **under** the bush?’

(112) *(...) sėdžiu **po** citrinmedžiu, klausausi paukščių (...)*
Sit.PRS.1SG **po** lemon-tree.INS.SG listen.PRS.1SG bird.GEN.PL
‘(…) I am sitting **under** a lemon tree, listening to birds (…)’

The constituent parts of plants, such as *lapai* ‘leaves’, *šakos* ‘branches’, *medžių vainikai* ‘the corona of trees’ may also be employed in the position of G. F in its turn refers to inanimate or animate entities, including people who usually sleep, sit, stand, wait, lie, walk, or get buried. Interestingly, abstract entities also combine with G of a plant-type, e.g.:

(113) *Kai parašiau "Gyvenimą **po** klevu" (...)*
When.ADV write.PST.1SG life.ACC.SG **po** maple-tree.INS.SG
‘When I wrote ‘Life **under** a maple-tree’ (…)’

The hypothesis of covering with such G can be supported by contextual clues, for instance, the verb *(pa)slėpti(s)* ‘hide’, as in the following utterance:

(114) *Griaudint perkūnijai negalima slėptis **po** aukštais medžiais.*
Thunder.PRS.PA thurderstorm.DAT.SG NEG.must.MOD hide.RFL.INF **po** high.INS.PL tree.INS.PL
‘In a thunderstorm it is advised not to hide **under** high trees.’

However, the cover sense of ***po*** is manifested not only when the human body or other concrete entities are involved, but also when abstract objects are employed as G. F may denote abstract entities or an action/process (2% and 0.6%, respectively, see Table 6), as in the following examples:

(115) *(...) **po** šiuo šiurkštumu slypi sielos blaškymasis.*
Po DEM.INS.SG.M rudeness.INS.SG hide.PRS.3SG soul.GEN.SG flounce.NOM.SG
‘(…) the flustering of the soul was hiding under this rudeness.’

(116) *(...) **po** savo entuziastingu paviršiumi imu dvejoti (...)*
Po 1.GEN.SG enthusiastic.INS.SG.M surface.INS.SG start.PRS.1SG doubt.INF
‘(…) **under** my enthusiastic surface I start doubting (…)’

Thus, in the present concrete sense, pertaining to both total and partial cover, the Lithuanian ***po*** manifests several types of entities. Concrete porous and non-porous objects (e.g. garments, bedclothes, household articles,

furniture, buildings, features and products of the earth, including plants) constitute the most frequent type of G, while people and human morphology take the second place. Abstract entities employed as G appear in a negligible number of instances. As regards F, it manifests the opposite tendencies: people and their body parts outnumber other concrete objects. However, abstract entities also appear in a small number of utterances, and so do actions/processes. In order to be able to potentially cover, G must be larger than or at least of the same size as F. Moreover, it must lend itself to being conceptualized as a 2D surface aligned in a parallel manner with respect to the entity that needs localizing, so the relevance of the negative axis is downgraded (cf. the primary sense of ***po***).

3.2.3 Personal space sense

The personal space sense of the Lithuanian ***po*** + INSTR, which is found in 3% of the instances from the corpus (see Table 4), constitutes another extension from the primary sense of the preposition, as related to the physical domain. Consider Figure 6 which offers the schematic representation of the spatial configuration between the sphere (F) and the dark line (G), whose region of (potential) influence is marked by a horizontal punctured line.

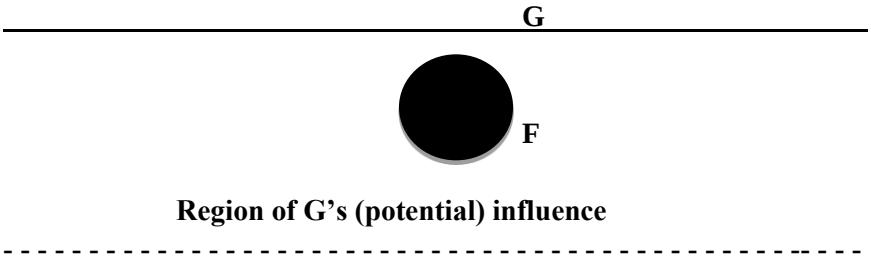


Figure 6. Spatial scene in the personal space sense of ***po***

As shown by the diagrammatic arrangement of the two entities, G, which is conceived as an elevated object G, is a geometric reference, i.e. the position of 'zero', while F situated lower than it designates the boundaries of oriented, or vertical, space. However, this type of construal does not stipulate that one entity is literally under the other (cf. the primary sense and the sense of cover of ***po***). In other words, in extra-linguistic reality, F must be situated in a relatively short distance away from G, designating the boundaries of someone's personal space. Such proximity implies the capability of a person

to interact with F, for instance, to see or reach something fast (cf. the primary sense of ***žemiau*** which also allows the alignment of F not necessarily directly under G; however, no potential interaction is implied). Therefore, human limbs, e.g. *ranka* 'hand', frequently appear in the position of G in this sense, e.g.:

(117) *Dana pati nepajuto, kaip švystelėjo (...)* ***po*** *ranka pakliuvusį butelį (...)*
Dana.NOM.SG self.EMPH.NOM.SG.F NEG.feel.PST.3SG how.ADV throw.PST.3SG **po** hand.INS.SG happen.PST.PA.ACC.SG.M bottle.ACC.SG
'Dana didn't even notice how she suddenly threw (...) a bottle that happened to lie **under** her hand (...)'

A variety of relatively small objects, e.g. *butelis* 'bottle', which are not only seen because of a short distance but also experience some action (e.g. seizing, lifting, throwing, packing, etc.), are among F's denotata in combination with *ranka* 'hand'. The CCLL also attests to the ubiquitous expression *pasitaikyti* ***po*** *ranka* 'happen to be **under** one's hand', meaning 'come/have/keep something to hand', which has become idiomatic in contemporary Lithuanian. Consider also contextual clues, e.g. the adverbs *šalia* 'near', *čia pat* 'near at hand', in order to corroborate the hypothesis of the accessibility of the entities in the sense under analysis, e.g.:

(118) *Šalia, čia pat* ***po*** *ranka, buvo priraikyta duonos (...)*
Beside.PREP near.ADV **po** hand.INS.SG be.PST.3SG slice.PST.PP.NOM.SG.F bread.GEN.SG
'There was bread sliced at hand (…)'

Kojos 'legs', and even shoes, such as *veltiniai* 'felt boots', constitute another type of G in the personal space sense of ***po***. F refers to an even wider range of entities than with the hand-type G, from concrete objects, such as *rublis* 'rouble', to various types of action, such as *raustis* 'scavenge', *dirstelėti* 'shoot a glance', e.g.:

(119) *(...) žmogus vedėsi savo šešėlį. Justas dirstelėjo sau* ***po*** *kojom ir nudžiugo, kad jis taip pat ne vienas.*
Man.NOM.SG take.RFL.PST.3SG 3SG.POSS shadow.ACC.SG. Justas.NOM.SG glance.PST.3SG 3.DAT.SG **po** leg.INS.PL and.CONJ cheer.PST.3SG that.CONJ 3.NOM.SG.M also.ADV NEG.one.NOM.SG.M
'(…) the man was taking his shadow for a walk. Justas glanced **under** his own feet and was happy to find out that he was not alone, either.'

(120) *(...) numesti tuos tris šimtus ir tris rublius tiesiai **po** šauklio veltiniais.*

Throw.INF DEM.ACC.PL.M three.ACC.PL hundred.ACC.PL and.CONJ three.ACC.PL ruble.ACC.PL straight.ADV **po** herald.GEN.SG felt-boot.INS.PL

'(…) throw those three hundred and three roubles straight **under** the herald's felt boots.'

The tendency for some amply used expressions to become fixed phrases, as in *praraja **po** kojomis* 'precipice **under** one's feet', *nusispjauti **po** kojomis* 'spit **under** somebody's feet', and especially *nesimaišyk/nesipainiok **po** kojomis* 'don't be **under** someone's feet', asking a person not to interrupt somebody's privacy, is also observed in the present corpus, e.g.:

(121) *Dažniausiai (....) painiojamės kits kitam **po** kojomis.*

Usual.ADV tangle.PRS.1PL other.NOM.3SG other.DAT.3SG **po** foot.INS.PL

'Usually, he thought, we are in the way for each other.'

(122) *Šie klausimai (...) liko painiotis **po** kojomis tarsi kokia padvėsusi karvė (...)*

DEM.NOM.1PL question.NOM.PL leave.PST.3PL tangle.RFL.INF **po** foot.INS.PL as.CONJ what.NOM.1SG.F die.PST.PA.NOM.SG.F cow.NOM.SG

'The questions remained in the way as if they were a dead cow (…)'

In the samples above, F is conceived as irritating and troublesome, because it precludes G from doing something by invading personal space. Only human beings are employed in the position of F, but abstract entities, as in example (122), are not excluded, either. The act of preventing somebody from doing something is also emphasized by contextual clues, for instance, the verbs as *pintis, painiotis, lįsti, trintis,* all referring to 'be/get in somebody's personal space in an annoying manner'.

Interestingly, the sense can also be derived when ***po*** combines with *kojos* 'legs/feet' not only in the Instrumental but also in the Genitive case. However, the usage seems to be rather rare (0.4% of the instances, see Table 4), appearing only in some dialects of contemporary Lithuanian. Concrete entities (e.g. the place of Makalynė,) involving the scope of somebody's glance, and actions (e.g. casting a look) usually take the position of F, cf.:

(123) *(...) ant šito kauburio, nuo kurio Makalynė (...) tau **po** kojų.*

On.PREP DEM.GEN.SG.M mound.GEN.SG off.PREP which.GEN.SG.M Makalynė.NOM.SG **po** foot.GEN.PL

'(…) on this mound, from the top of which Makalynė (…) **under** your feet.'

(124) *Laurynas ir vėl akis nudelbia sau **po** kojų, pastebi pamažėl šliuožiantį slieką.*

Laurynas.NOM.SG and.CONJ again.ADV eye.ACC.PL cast.PRS.3SG 3.DAT.SG.M **po** foot.GEN.PL notice.PRS.3SG slow.ADV crawl.PRS.PA.ACC.SG.M earthworm.ACC.SG

'Laurynas casts his eyes **downwards** again, and sees a slowly crawling earthworm.'

Expressing irritation, when F invades G's personal space, may also be possible when ***po*** is used with the Genitive, as attested by the corpus, e.g.:

(125) *(...) nepageidauju, kad trintumėtės man **po** kojų, berneli.*

NEG.wish.PRS.1SG that.CONJ rub.RFL.IRR.3PL 1.DAT.SG **po** foot.GEN.PL boy.DIM.VOC.SG

'1'd rather you didn't get in my way, little boy.'

In addition to human limbs used for manipulating some objects a short distance away, there may also be *nosis* 'nose' and *akis* 'eye' employed in the position of G with ***po*** in the sense under study; however, they have not appeared in the sample under study.

On the other hand, not only human morphology functions as G in the personal space sense of the preposition, because a window also appears in the present spatial configuration, as in the following CCLL example:

(126) *Kažkas švilpaudamas praėjo **po** langu.*

Somebody-NOM whistle-CVB-SG.M pass.PST.3SG **po** window-INS.SG

'Somebody passed whistling **under** the window.'

As we can see, the position of F may be taken by people, their actions; however, concrete inanimate objects are the most frequent in the corpus, as attested by examples with furniture, such as *stalas* 'table' or *suolas* 'bench', which is typically used outside, as well as *takas* 'path', *gatvė* 'street', e.g.:

(127) ***Po** tais langais stovėjo ilgas medinis stalas (...)*

Po DEM-INS.PL.M window.INS.PL stand.PST.3SG long.NOM.SG.M wooden.NOM.SG.M table.NOM.SG

'**Under** those windows there stood a long wooden table (…)'

(128) *(...) akys vis užkliūdavo už pačios išminto takelio **po** Tomo palatos langais.*

Eye.NOM.PL constant.ADV catch.HAB.PST.3SG behind.PREP EMPH.GEN.SG.F tread.PST.PP.GEN.SG.M path.DIM.GEN.SG **po** Tomas.GEN.SG ward.GEN.SG window.INS.PL

'(…) a small path **under** the windows of Tom's ward that she had trodden herself would constantly catch the eye.'

Contextual clues, for instance, the adverb *čia pat* 'near/nearby', testifies to the relevance of an element of proximity in space in combination with a window-type of G, e.g.:

(129) *(...) šoferių mašinom, sustatytom čia pat, **po** langu.*
Driver.GEN.PL car.INS.PL stand.PST.PP.INS.SG.F near.ADV **po** window.INS.SG
'(…) the drivers' cars parked nearby **under** the window.'

Thus, in all the instances illustrating the personal space sense of the Lithuanian ***po***, whether it governs the Instrumental or, in rare cases, the Genitive, a feature of direct negative verticality in Euclidean space, as derived from the primary sense of the preposition, is backgrounded, because only G as an elevated entity with respect to F is preserved (see also the same semantic feature in some utterances illustrating the cover sense). What becomes foregrounded is the arrangement of the two entities in proximal distance, which implies G's capability to potentially interact with F. As attested by the corpus data, a person can see or reach some object fast or perform other actions with it, hence the importance of qualitative proximity in the present semantic structure (cf. the primary sense and geographical descriptions of ***žemiau***, which also imply distance between the objects but no functional engagement).

3.2.4 Direction sense

The Lithuanian ***po***, when used with the Dative case, manifests the direction sense that also pertains to the physical domain of human experience. However, as compared with the frequency of the primary sense, which appears in 6.2% of the instances, and the other concrete senses of the preposition, such as cover – 15.2% and personal space – 3.4%, the direction sense is found in as few as 0.2% of the samples (see Table 4), e.g.:

(130) *(...) **po** kairei ir **po** dešinei atsivėrė (...) duobės.*
Po left.DAT.SG and.CONJ right.DAT.SG RFL.open.PST.3PL pothole.NOM.PL
'(…) **on** the left and **on** the right potholes were lying open.'

As shown by the example above, ***po*** combines only with two words in the direction sense, i.e. either *dešinė* 'right' or *kairė* 'left', acting as G, when internal reference frames are implied, while F's position may be taken by any type of entity, from a concrete object to abstraction to actions/processes. The sense is graphically represented in Figure 7 demonstrating the conceptual spatial relation between F (the sphere) located on any side of an

animate G (the bold line). Punctured lines indicate the region of G's (potential) influence over F.

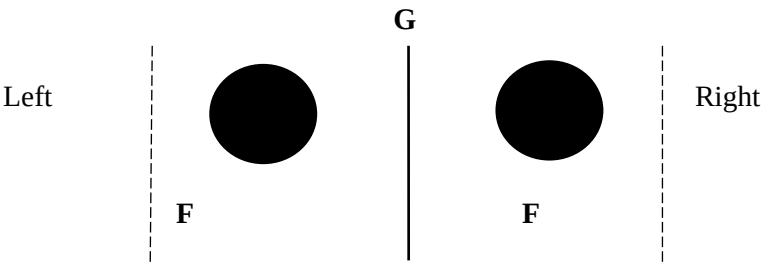


Figure 7. Spatial scene in the direction sense of ***po***

The prepositional sense, which is typical of some dialects, resembles the meaning of the Locative case denoting localization in contemporary Lithuanian (cf. *kairėje* '**on** the left side', *dešinėje* '**on** the right side') (Ambrazas 2006: 295). According to Kuryłowicz (1964: 194-195 quoted in Ambrazas 2006: 246), the Dative and the Locative are historically derived from the same form. Serra-Borneto (1995a quoted in Oakley 2007: 221) states that Dative case markers within the framework of cognitive linguistics highlight static relations, which does not contradict the example cited, either. The direction sense of the preposition may be historically related to the personal space sense (cf. ***po*** *dešine/kaire ranka* **po** right-INS.SG.F/left-INS.SG.F arm-INS.SG '**under** the right/left arm') due to an element of proximal distance between the entities.

3.2.5 Pervasion sense

3.2.5.1 Key semantic elements

The Lithuanian ***po***, when used with the Accusative case, manifests the pervasion sense that also pertains to the physical domain of human experience (10% of the instances, see Table 4). Consider Figure 8 which depicts the conceptual spatial relation holding between F (the sphere) and G (a 2D surface or a 3D object) in the semantic structure under study.

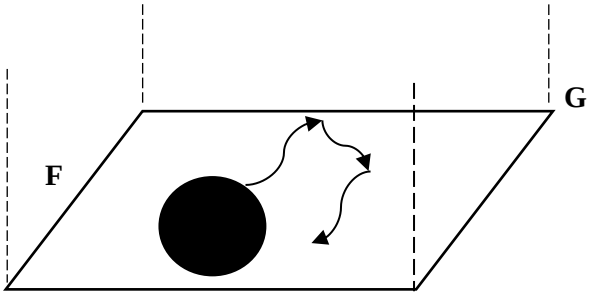


Figure 8. Spatial scene in the pervasion sense of ***po***

As shown by Figure 8, the preposition entails the diagrammatic configuration of the entities, in which G functions as a geometric reference, i.e. the position of 'zero', on the horizontal axis or the vertical line. The geometric disposition of the objects is completely different from that of the primary sense or any other concrete senses discussed so far, some of which directly (e.g. primary) refer to the negative value of the vertical axis, while in cover, personal space, and direction, this semantic element becomes backgrounded, and emphasis is laid only on the successive arrangement of the entities. What becomes prominent in the present sense is the pervasive movement or distribution of F all over G (see the arrows in Figure 8). The capability of the two entities to interact with each other in this way is in line with Luraghi (2009: 145), who emphasizes total affectedness, accounting for such concrete uses of the Accusative as direction or destination. This semantic peculiarity does not contradict Serra-Borneto's (1995a as quoted in Oakley 2007: 221) research, either, which points out a dynamic element as the underlying key notion of the case under study (see also Ambrazas 2006: 297):

(131) *(...) žvaigždžių pilotų laidotuvės: amžinos klajonės* ***po*** *Visatą joninėje laidojimo raketoje.*
Star.GEN.PL pilot.GEN.PL funeral.NOM.PL eteranal.NOM.PL.F wandering.NOM.PL **po** space.ACC.SG ionic.LOC.SG mortuary.GEN.SG spaceship.LOC.SG
'(…) the funeral of interstellar pilots: eternal wandering **in** space in an ionic mortuary spaceship.'

(132) *(...) vyrui reikia* ***po*** *svietą pasivalkioti.*
Man.DAT.SG need.PRS.3SG **po** world-ž.ACC.SG gad.INF
'(…) it is necessary for a man to gad **around** the world.'

As attested by the utterances above, *visata* 'space' and *svietas* 'world' refer to places within the boundaries of which the iterative action of F, either

that of *raketa* ‘spaceship’ and *vyras* ‘man’, takes place. In example (131), G is conceived as a three-dimensional entity, presupposing F’s route of movement from one place to another, either vertically or horizontally (see the punctured lines, extending the surface below to imply a three-dimensional entity in Figure 8). In example (132), G may be conceptualized as a two-dimensional surface, enabling the other object to change its position only along the horizontal axis (see also Figure 8). The validity of the hypothesis of a dynamic element in the semantics of ***po*** is confirmed by nouns, such as *klajonės* ‘wandering’, or verbs, for instance, *pasivalkioti* ‘gad around’, both expressing repetition of an action. In fact, such contextual clues in the corpus are rather prolific and include not only nouns, such as *ekskursija* ‘trip/excursion’, but also a wide range of other verbs, all denoting various types of movement, for instance, synonyms for wandering/roaming/travelling: *klajoti*, *klaidžioti*, *keliauti*; loafing/sauntering: *dykinėti*, *slankioti*, *bastytis*, *trainiotis*, *valkioti(s)*; trotting/flailing: *blaškytis*, *daužytis*, *trankytis*, *puldinėti*; hiding: *slapstytis*; searching/scavenging: *ieškoti*, *naršyti*, *raustis*; snooping: *landžioti*, *šniukštinėti*; pervading/spreading: *pasklisti*, *sklaidytis*; interspersing/distributing: *išbarstyti*, *skirstytis*; running/scurrying: *lakstyti*, *nardyti*; chasing: *vaikytis*, *vytis*; rustling: *šnarinti(s)*; walking/marching: *žingsniuoti*, *vaikščioti*; driving/riding: *važinėti*; flying: *skraidyti*, *skraidžioti*; carrying: *nešioti*; wading: *braidžioti*, *braidyti*; swinging/twisting: *apsukti*, *sukti(s)*; and even verbs referring to clearing/cleaning, such as *tvarkytis*, *kuoptis*, for they also involve moving from one place to another.

However, F’s pervasion all over the place may involve not only physical movement, but also a less concrete change of position. For instance, in the CCLL instances below, the position of F is taken by *žvilgsnis* ‘look/glance’, which is explicitly or implicitly referred to:

(133) *Tėvai pasitikėjo ja, vieną išleisdami <u>pasidairyti</u> **po** pasaulį.*
Parent,NOM.PL RFL.trust.PST.3PL 3.INS.SG.F one.ACC.SG allow.CVB.PL.M RFL.look.INF **po** world.ACC.SG
‘The parents trusted her, allowing to <u>look around</u> the world.’

(134) *(…) <u>žvilgsniu klaidžiojo</u> **po** atitirpusias iš po sniego darželio loveles (…)*
Glance.INS.SG wander.PST.3SG **po** NEG.frozen.ACC.PL.F from.PREP under.PREP snow.GEN.SG garden.DIM-GEN.SG pot.ACC.PL
‘(…) [his] <u>eyes were wandering</u> **through** the pots that had unfrozen from under the snow in the small kitchen garden (…)

Thus, aligning the entities along the vertical or horizontal axes in the physical domain does not play a major role in the pervasion sense of the Lithuanian ***po*** + ACC. It is a shift in the characteristics of F, namely, its iterative movement all over G as (a) a single object, e.g. *vaikščioti* ***po*** *miestą* walk.INF **po** town.ACC.SG 'walk in the town', or among (b) a cluster of homogeneous objects, as in *vaikščioti* ***po*** *mišką* walk.INF **po** forest.ACC.SG 'walk in the forest' (a multiplex to mass image schema transformation, involving moving away from the cluster until the individual objects start to appear as a homogenous mass, then moving back to the point where the mass turns into a cluster again) that consequently presupposes a different type of functional interaction as the key element of the prepositional sense. Therefore, the semantic structure under study does not seem to originate from any concrete sense discussed so far, but rather belongs to another network, attesting to an instance of homonymy. Viewing the spatial scenes may entail both intrinsic and relative frames of reference without any semantic consequences. In other words, the vantage point may be external (cf. *off-stage* in Langacker 1987) or involve the coincidence of the main reference point and G's salient features, while axes and angles are projected on the basis of its geometry. The pervasion sense will be further discussed in terms of two closely interrelated criteria: (1) the physical aspect, and (2) the frequency of instantiation in the CCLL.

3.2.5.2 Types of F and G

In the pervasion sense, the Lithuanian ***po*** + ACC exhibits several types of F and G, the frequency of which is given in Table 7.

Table 7. Types of F and G in the pervasion sense of ***po*** (absolute and relative frequencies)

G / F	Human body	Concrete object	Abstract object	Total 2
Person	1/1%	80/80%	4/4%	85/85%
Concrete object	1/1%	7/7%	–	8/8%
Action/ process	–	2/2%	–	2/2%
Abstract entity	–	5/5%	–	5/5%
Total 1	2/2%	94/94%	4/4%	100/100%

As seen from Table 7, a human being and her/his ability to move as F over a two- or three-dimensional surface statistically takes the lead (85%, see Total 2), which is illustrated in the majority of the instances. Other concrete entities, e.g. *dulkės* 'dust', on the other hand, appear in the position of F in fourfold as many instances as actions/processes, such as *širdies tvinksniai* 'heartbeats', *vibracija* 'vibration' (8% and 2%, respectively, see Total 2), both constituting the minority, and so do abstract entities, e.g. *keiksmai* 'swear words', *scenos* 'family scenes', *dvokas* 'stench', *kvapas* 'smell', *šiluma* 'warmth' (5%, see Table 7). However, the physical aspect of the pervasion sense is mainly determined by the nature of G. In other words, in the majority of the instances (94%, see Table 7), it is a concrete inanimate entity, while in the remaining examples, either a human body or even an abstract object (2% and 4%, respectively, see Total 1), that is selected in the spatial scene with a specific type of functional interaction.

In the pervasion sense of ***po***, G is usually a two-dimensional object, which may include a variety of entities, each of them different in size. For instance, the following CCLL examples with *pasaulis* 'world', *kraštas* 'land/country' illustrate the largest type:

(135) *O jie išeidavo ir leisdavosi klajoti* ***po*** *pasaulį.*
And.CONJ 3.NOM.PL.M leave.HAB.PST.3PL and.CONJ set.RFL.HAB.PST.3PL wander.INF **po** world.ACC.SG
'And they would leave and set out to wander the world.'

(136) *(...) kas jis (...) ir kodėl bastosi* ***po*** *šiuos kraštus.*

INT.NOM 3.NOM.SG.M and.CONJ why.ADV roam.RFL.PRS.3SG **po** DEM.INS.PL.M land.ACC.PL

'(…) who he is and why he roams these lands.'

However, smaller bounded places may also function as a two-dimensional G in this sense of ***po***, hence the productivity with *miestas* 'city', *kaimas* 'village', *rajonas* 'neighbourhood, *senamiestis* 'old town', *stovykla* 'camp', and human-made landmarks, such as *gatvė* 'street', *stotis* 'station', *turgus* 'market', *aikštė* 'square', *kiemas* 'yard', *šventorius* 'churchyard', *kapinės* 'cemetery', etc.:

(137) *(...) žiemą ir vasarą jis klaidinėjo ieškodamas darbo **po** aplinkinius kaimus.*

Winter.ACC.SG and.CONJ summer.ACC.SG 3.NOM.SG.M roam.PST.3SG search.CVB.SG.M job.GEN.SG **po** neighbouring.ACC.PL.M village.ACC.PL

'(…) he was roaming the neighbouring villages in search of a job in winter and summer.'

(138) *Kitas vaikas (...) vaikėsi **po** kiemą gaidį.*

Other.NOM.SG.M child.NOM.SG chase.RFL.PST.3SG **po** yard.ACC.SG cock.ACC.SG

'The other child (…) was chasing a cock **in** the yard.'

Various types of residential areas, for instance, *namas* 'house', *troba* 'hut', *būdelė* 'lodge', *barakas* 'barracks', or their constituent parts, such as *kambarys* 'room', are also included into the list of G's denotata. A wide range of other places are found in its position, too, hence the productivity of combinability patterns with the nouns *sekretoriatas* 'secretariat', *redakcija* 'editorial office', *kamera/celė* 'cell', *kabinetas* 'office', and similar areas where people congregate for a particular purpose. Although the objects are conceived as three-dimensional, only the two-dimensional bottom part over which the other entity moves is highlighted in the process of conceptualization, e.g.:

(139) *Rikis (...) ėmė nervingai žingsniuoti **po** kambarį.*

Rikis.NOM.SG start.PST.3SG nervous.ADV walk.INF **po** room.ACC.SG

'Rikis (…) started walking **around** the room in a nervous manner.'

A variety of human-made objects, from relatively small, such as *piniginė* 'wallet', to larger ones, for instance, various types of transport, may also act as G in the pervasion sense of ***po***. However, the dimensionality of this entity is backgrounded due to the foregrounding of F's movement, e.g.:

(140) *(...) ji susimąstė, dar sykį panaršė **po** piniginę ir ištraukė penkių eurų banknotą (...)*

3.NOM.SG.F RFL.think.PST.3SG again.ADV rifle.PST.3SG **po** purse.ACC.SG and.CONJ five.GEN.PL euro.GEN.PL banknote.ACC.SG

'(…) she thought for a while, rifled the purse once again and took out a banknote of 5 euros (…)'

(141) *Vibracija pasklinda **po** visą laivą, ant staliuko ima barškėti peleninė (...)*

Vibration.NOM.SG spread.PRS.3SG **po** entire.ACC.SG.M ship.ACC.SG on.PREP bench.GEN.SG start.PRS.3SG shake.INF ashtray.NOM.SG

'Vibration spreads **across** the entire ship, an ashtray starts shaking on the table (…)'

In addition to human-made places and objects, natural formations conceptualized as two-dimensional surfaces may also appear with ***po***, hence the usage of *dykuma* 'dessert', *pieva* 'meadow', *laukas* 'field', *draustinis* 'nature reserve', mass or substance nouns, such as *pelkė* 'swamp', *dirvonas* 'virgin soil', which refer to homogeneous objects. *Miškas* 'forest', *pušynas* 'pine forest', *eglynas* 'fir forest', *krūmai* 'bushes', all constituting multiplex entities, may also appear as G's typical denotata in the pervasion sense, e.g.:

(142) *Pasklinda vestuvininkai **po** mišką.*

Overspread.PRS.3PL wedding-member.NOM.PL **po** forest.ACC.SG

'Members of the wedding party overspread ***in*** the forest.'

Finally, territories that hardly succumb to any measurements or lend themselves to any type of conceptualization, such as *horizontas* 'vast unlimited space', *pakraščiai*/*kampai* 'corners', may also take the position of G in the semantic structure under study, e.g.:

(143) *Kur Uogelė?! Ir šoko **po** visus kampus dairytis, uostinėti.*

Where.ADV Berry.DIM.NOM.SG and.CONJ leap.PST.3SG **po** every.ACC.PL.M corner.ACC.PL look.RFL.INF nuzzle.INF

'Where is Little Berry?! And [she] leaped to look round and nuzzle every corner.'

On the other hand, the physical aspect of the pervasion sense of ***po*** is manifested not only by inanimate concrete objects, but also by human morphology featuring as G. However, this type of usage is very rare (1% of the instances, see Table 7), e.g.:

(144) *Jos širdies tvinksniai išvarinėja nuodus **po** visą kūną.*

3.GEN.SG.F heart.GEN.SG beat.NOM.PL pump.PRS.3PL poison.ACC.PL **po** entire.ACC.SG.M body.ACC.SG

'Her heartbeats are pumping poison **round**/**through** the whole body.'

In addition to concrete objects and the human body, there are also abstract entities (e.g. *siela* 'soul', *naktis* 'night', *tinklas* 'Internet', *komandiruotė* 'business trip') employed as G in the spatial scenes under study. However, such examples are also in the minority, as attested by the CCLL data (4% the instances, see Table 7):

(145) *(...) jis ėmė vaikštinėti **po** naująją sielą.*
3.NOM.SG.M start.PST.3SG walk.INF **po** new.ACC.SG.F.DEF soul.ACC.SG
'(…) he started walking **in** the new soul.'

(146) *(...) nepakeldavo galvos nuo kompiuterio – kartais landžiodavo **po** Tinklą (...)*
NEG.lift.PST.3SG head.GEN.SG off.PREP computer.GEN.SG sometimes.ADV browse.HAB.PST.3SG **po** Net.ACC.SG
'(…) [he] didn't lift his head from his computer – sometimes he browsed the Net (…)'

Thus, in the pervasion sense of the Lithuanian ***po*** + ACC, a randomly moving entity as F becomes the most important in the spatial scenes along the vertical axis, but more frequently on the horizontal line. Typically it is a person that changes the position by moving over the surface of various types and sizes of a two- or three-dimensional G. However, as attested by the CCLL examples, such an entity may also designate actions or abstract entities which are distributed over some places.

3.2.6 Temporal sequence sense

In addition to the concrete senses discussed so far, which pertain to the arrangement of objects in Euclidean space, the Lithuanian ***po*** has also developed quite a number of senses in the non-physical domain. Temporal sequence is the most frequent in the CCLL data (50.3% of the instances, see Table 4: 50.2% with the Genitive and 0.1% with the Dative), therefore, predominance in the semantic network, as one of the prompts for primary sense identification suggested by Tyler and Evans (2003: 47-50), is not a determining factor in the compiled corpus.

All the CCLL utterances manifesting the prepositional sense under study indicate a certain amount of time, or G, after the moment of speech and remaining until an expected event, which functions as F. Moreover, the processing of temporal scenes involves the horizontal axis, when two entities are conceived as located one after the other in a mental timeline running from left (past) to right (future), which could be due to writing direction (see Tversky *et al.* 1991 quoted in Hong *et al.* 2017: 1688-1689) and can be

proved by pointing to the antonymous ***prieš*** 'in front' and 'ago' (not ***virš*** 'above') and other cross-linguistic correspondences of the conceptual metaphor FUTURE IS IN FRONT OF EGO and the PAST IS BEHIND EGO, i.e. not BELOW (Torralbo *et al.* 2006; cf. vertical time in Chinese in Borodisky *et al.* 2011; Hong *et al.* 2017; Athanasopoulos 2017). Thus, ***po*** manifests a shift away from a down region of G as the search domain along the vertical axis attributed to its semantics when it functions as a projective preposition governing the Instrumental case. Consider Figure 9 which offers an approximate depiction of the conceptual relation holding between F and G, as coded linguistically by the preposition in the temporal sequence sense and represented by the diagrammatic configuration between the sphere (F) and the perpendicular dark line (G), which coincides with the moment of speech implicitly referred to in such utterances.

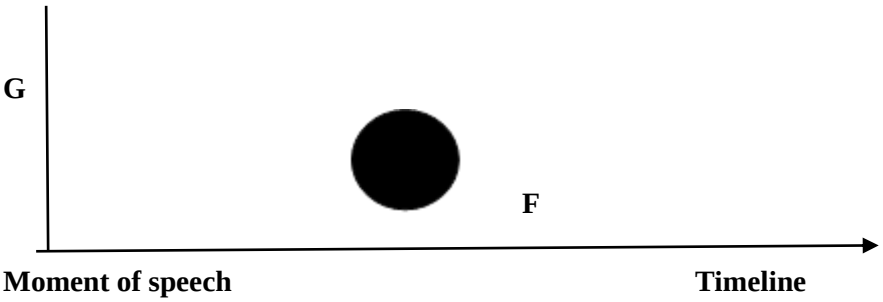


Figure 9. Temporal scene in the temporal sequence sense of ***po***

As claimed by Haspelmath (1997: 56ff), the temporal anterior and posterior are frequently based on the spatial front and back, the notions of 'front' and 'in front of' in many languages being linked with 'before' and the concepts of 'back' or 'behind' with 'after'. However, Lithuanian seems to be an exception. According to Šeškauskienė and Žilinskaitė-Šinkūnienė (2015: 24), anterior is expressed in the same manner: ***prieš*** 'before' + ACC covers the meanings of spatial anterior ('in front of'), temporal anterior ('before') and distance-past ('ago'). Posterior, on the other hand, is coded differently: ***už*** 'behind' + GEN refers not only to sequential location in space, but also to temporal posterior, entailing sequential location in time, when one event follows another; however, the latter may also be rendered by ***po*** 'under' + GEN. Consider the following examples from the authors' study (*ibid.*, p. 24-25):

(147) *Maždaug **už** pusvalandžio sustojo mikriukas.*

Approximate.ADV **už** half-hour.GEN.SG stop.PST.3SG bus.DIM.NOM.SG

'The minibus stopped **after** approximately half an hour.'

(148) *Nei **po** pusvalandžio, nei **po** valandos Povilas negrįžo.*

Neither.CONJ **po** half-hour.GEN.SG nor.CONJ **po** hour.GEN.SG Povilas.NOM.SG NEG.return.PST.3SG

'Povilas came back neither **after** half an hour nor **after** an hour.'

Both prepositions mean 'after' in the temporal expressions above; however, ***už*** competes with ***po***, the latter featuring much more prominently in contemporary Lithuanian. Interestingly, in some derivatives which refer to temporal sequence entailing backward, such as ***už**-vakar* 'the day **before** yesterday', ***už**-pernai* 'the year **before** last year', or forward, as in ***už**-poryt* 'the day **after** tomorrow', temporal sequence is expressed by ***už,*** the less frequent element encoding the sense (Šeškauskienė and Žilinskaitė-Šinkūnienė 2015: 25).

Further various types of temporal sequence will be illustrated. For instance, in the following utterances, the quantity of time is imprecise, but relatively short, and expressed by such ubiquitous phrases as ***po** kurio/kiek laiko*, meaning 'after some time':

(149) *(...) koks avietynas! – **po** kurio laiko sušuko Milda.*

What.NOM.SG.M raspberry.cane.NOM.SG **po** which.GEN.SG.M time.GEN.SG exclaim.PST.3SG Milda.NOM.SG

'(…) what raspberry-canes! – exclaimed Milda **after** some time.'

When distance between the two events is longer, but still imprecise, the Lithuanian language frequently exhibits patterns with the adjectives *ilgas* 'long', *trumpas* 'short' in combination with ***po***, e.g.:

(150) *(...) **po** tokio ilgo laiko jaučiu, kad ji mane supranta.*

Po such.GEN.SG.M long.GEN.SG.M time.GEN.SG feel.PRS.1SG that.CONJ 3.NOM.SG.F 1.ACC.SG understand.PRS.3SG

'(…) **after** such a long time I feel that she understands me.'

On the other hand, the CCLL data also attests to a number of cases where reference is made to a more definite interval between the events (from the shortest to the longest); hence *akimirka* 'moment', *sekundė* 'second', *minutė* 'minute', *valanda* 'hour', *diena* 'day', *savaitė* 'week', *mėnuo* 'month', *metai* 'year', and other units of measuring exact time in the position of G, illustrating a wide range of expressions in the temporal domain:

(151) ***Po** kelių sekundžių svetainėje pasirodė kambarinė.*

Po several.GEN.SG second.GEN.SG sitting-room.LOC.SG RFL.appear.PST.3SG housemaid.NOM.SG

'**After** several seconds the housemaid appeared in the sitting-room.'

(152) *Dabar jis taupo pinigus, ir* ***po*** *septynerių metų vėl juos pamatys.*

Now.ADV 3.NOM.SG.M save.PRS.3SG money.ACC.PL and.CONJ **po** seven.GEN.PL.DEF year.GEN.PL again.ADV 3.ACC.PL.M see.FUT.3SG

'He is saving money, and will see them again **after** seven years.'

Po in the temporal sequence sense may also indicate a specific time of the day, the season, the year, etc.:

(153) *(...) badmečiai (...)* ***po*** *1800 m. užeidavo retai.*

Famine.NOM.PL **po** 1800 year.GEN.PL come.HAB.PST.3PL rare.ADV

'(…) famine (…) became rare **after** 1800.'

Sometimes a specific interval after the moment of speech and remaining until an expected event may be indicated not only by units of measurement but also by specific events expressed by nouns in contemporary Lithuanian. Thus, the preposition meaning 'after' may precede meal times and dishes (e.g. *priešpiečiai* 'lunch', *kava* 'coffee'), natural phenomena (e.g. *saulėlydis* 'sunset', *šlapdriba* 'sleet'), man-made disasters (e.g. *skerdynės* 'slaughter', *karas* 'war'), conditions of one's body and mind (e.g. *miegas* 'sleep', *mirtis* 'death'), gatherings (e.g. *repeticija* 'rehearsal', *pamokos* 'lessons/classes'), states (e.g. *sėkmė* 'success', *šokas* 'shock'), acts (e.g. *pokalbis* 'conversation', *klyksmas* 'scream'), or any other processes of doing something or something happening, e.g.:

(154) ***Po*** *kavos pasirodė šokių orkestras.*

Po coffee.GEN.SG RFL.appear.PST.3SG dance.GEN.PL band.NOM.SG

'**After** the coffee break there was time for a dance band.'

Furthermore, the language also allows the usage of nouns referring to a specific location, usually an educational institution, to express temporal sequence with ***po*** in this sense, as attested by the following example:

(155) *Ką veiksi* ***po*** *gimnazijos?*

What.ACC do.FUT.2SG **po** gymnasium.GEN.SG

'What are you planning **after** gymnasium?'

Sometimes a specific interval after the moment of speech and remaining until an expected event may be expressed not only by nouns but also by pronouns. In such cases, both ***už*** ('behind'), referring to static, or spatial, interpretations, and ***po*** ('after'), linked to mobile, or temporal situations, are equally allowed. For instance, people may ask each other standing in a queue: *Kas* ***už/ po*** *jūsų*? 'Who is **behind**/ **after** you?' However, according to Šeškauskienė and Žilinskaitė-Šinkūnienė (2015: 19-20), temporal sequence

rendered by ***po*** is much more common in contemporary Lithuanian. Other researchers, for instance, Markevičius (2014: 78), emphasize the impact of dialects on the usage of the two prepositions: Samogitians employ ***už*** to express the future, while ***po*** appears with past tense forms, hence *jis grįš* ***už*** *metų* 3.NOM.SG.M return.FUT.3SG **už** year.GEN.PL 'he will return **after** a year' vs. *jis grįžo* ***po*** *metų* 3.NOM.SG.M return.PST.3SG **po** year.GEN.PL 'he returned **after** a year'. The indigenous population of Eastern Higher Lithuania, on the other hand, uses ***už*** in both cases: *jis grįžo/grįš* ***už*** *metų* 3.NOM.SG return.PST.3SG/return.FUT.3SG **už** year.GEN.PL.

Finally, the temporal sequence sense attests to very prolific usage patterns with ***po*** *to*, meaning '**after** that/later', when an event precedes the preposition, and ***po*** *to, kai*, implying '**after** the event when', when an event follows the preposition, e.g.:

(156) *Plikis nuvargęs linktelėjo.* ***Po*** *to pagalvojo ir pratarė: – Ir aš jums dėkoju.*
Bald-head.NOM.SG tired.NOM.SG.M nod.PST.3SG **po** DEM.GEN.SG.M think.PST.3SG and.CONJ say.PST.3SG and.CONJ 1.NOM.SG 2.DAT.PL thank.PRS.1SG
'Bald-head nodded in a weary manner. **After** that he thought and said: I am also grateful to you.'

(157) ***Po*** *to, kai jūs mane apiplėšėte... ir atemėte tarnybinį pažymėjimą.*
Po DEM.GEN.SG.M when.ADV 2.NOM.PL 1.ACC.SG rob.PST.2PL and.CONJ take.PST.2PL service.ACC.SG.M card.ACC.SG
'**After** you robbed me off my service card.'

However, the meaning of temporal sequence is not confined to ***po*** + GEN. Sometimes ***po*** + DAT may also be encountered, as in the following phraseological unit from the CCLL, where the preposition also means 'after':

(158) *Egonai,* ***po*** *viskam nušauk mane.*
Egonas.VOC.SG **po** everything.DAT.SG shoot.IMP.2SG 1.ACC.SG
'Egonas, **after** everything shoot me.'

However, the present research data shows that the Dative is rather rare in contemporary Lithuanian, except for some dialects (0.1% of the instances, see Table 4). So, this type of usage falls in line with Zinkevičius (1981: 192) and Ambrazas (2006: 295-296) who claim that the case used to appear more frequently with prepositions in the past, when ***po*** was still a preverb, as attested by old writings; later it was replaced with the Genitive. This explanation prevails over the other account that attempts to explicate the

ablative meaning of ***po*** + GEN by referring to the corresponding Greek and Latin prepositions (Greek ***ἀπό***, Latin ***ab***, both meaning 'away from'), which may also be in line with cognitive works, according to which the case denotes a reference point (Berg-Olsen 2004).

All in all, the temporal sequence meaning of the Lithuanian ***po*** + GEN can be interpretable by the deeply entrenched metaphor TIME IS SPACE (Lakoff and Johnson 1980/2003), when the spatial arrangement of entities gives rise to the sequential location of events in time. The conceptualization of an event as an object is an example of the pervasive metaphorical process known as ontological metaphor that allows us to understand abstract entities as if they were concrete objects and mentally manipulate them (Lakoff and Johnson 1980/2003). Since the succession of F and G along the vertical axis, which is typical of the majority of the concrete senses of ***po***, is retained in the horizontal line as well, the hypothesis of extending the temporal sequence meaning from the primary sense of the preposition is further strengthened.

Interestingly, the FORESEEABLE FUTURE EVENTS ARE UP (and AHEAD) metaphor, which represents the version in which the future is conceptualized as up and ahead, is criticized by authors studying other languages and suggesting REMOTEDNESS IS UP / PROXIMITY IS DOWN instead to refer to approaching future events. For instance, in Russian, such expressions as ***под*** *воскресенье* "right before Sunday", lit. "TO **under** Sunday" and ***под*** *праздник* "just before the feast", lit. "to **under** feast" (Luodonpää-Manni and Viimaranta 2010: 80-82) might as well illustrate that the role of the vertical axis in descriptions of temporal relations is not confined to Lithuanian only. However, in this language, only the arrangement of events resembling their order along the vertical line is retained in the temporal sequence sense of ***po***.

3.2.7 Temporal consistency sense

Another temporal situation that entails the usage of the Lithuanian ***po*** + GEN refers to a consistent sequence of events (3.8% of the instances, see Table 4). Consider Figure 10 which offers an approximate depiction of the conceptual relation holding between two events, F and G, as coded linguistically by the preposition and represented by the diagrammatic configuration between two spheres following each other on an intermittent basis (as opposed *post hoc, ergo propter hoc*, denoting causal relations) along the horizontal timeline extending from left (past) to right (future).

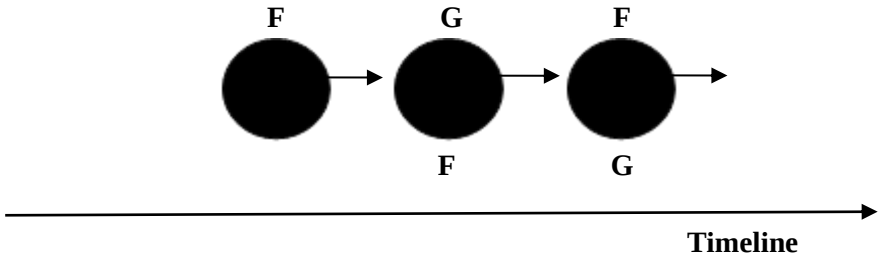


Figure 10. Temporal scene in the temporal consistency sense of ***po***

The prepositional meaning seems to derive from the temporal sequence sense when the semantic element of the sequential location of entities in the temporal domain is retained but becomes backgrounded not only by the persistence of action but also by a specific type of F and G, e.g.:

(159) *Stikliukas **po** stikliuko ir įsivyravo vakarykštė atmosfera.*
Glass.DIM.NOM.SG **po** glass.DIM.GEN.SG and.CONJ RFL.settle.PST.3SG day-old.NOM.SG.F atmosphere.NOM.SG
'One shot **after** another shot and the day-old atmosphere settled.'

(160) *Miršta vaikas **po** vaiko, supranti?*
Die.PRS.3SG child.NOM.SG **po** child.GEN.SG understand.PRS.2SG
'A child dies **after** a child, do you understand?'

As we can see from the utterances above, one event is followed by another event on an ongoing basis, thus what once was F becomes G, which later turns into F again, etc. Therefore, both events taking the position of F and G in the temporal consistency sense of ***po*** are the same (e.g. drinking a shot, dying children). Interestingly, although shots and children are concrete objects, the focus is on temporal development rather than the configuration of these entities in physical space. For instance, in the following example, the action of unfastening is emphasized even though the buttons are sewn one after another on to a garment, and we can clearly measure the distance between them in physical space:

(161) *Saga **po** sagos ji atsegiojo paltą.*
Button.NOM.SG **po** button.GEN.SG 3.NOM.SG.F NEG.fasten.PST.3SG coat.ACC.SG
'She unfastened the coat one button **after** another.'

There are also some other temporal expressions, when ***po*** + GEN is employed, e.g. *sprindis **po** sprindžio* span.NOM.SG **po** span.GEN.SG 'span **after** span' and *žingsnis **po** žingsnio* step.NOM.SG **po** step.GEN.SG 'step **by** step'. However, the focus is again on motion rather than on the alignment of somebody's feet on the ground. Moreover, such expressions are typically

used in situations, to express either directly or indirectly (metaphorically) slow movement, when a much faster development of events is expected, e.g.:

(162) *(...) traukias atatupsta (...), sprindys **po** sprindžio, vis stabteldama dar pasakyt žodį (...)*

Retreat.RFL.PRS.3SG backwards.ADV span.NOM.SG **po** span.GEN.SG over.PREP stop.CVB.SG.F again.ADV say.INF word.ACC.SG

'(…) [she] is moving slowly backwards (…), span **after** span, stopping over and over again for a word (…)'

(163) *Miško keliuku žingsnis **po** žingsnio pasukau į aną tolimą rugsėjo naktį (...)*

Forest.GEN.SG path.DIM.INS.SG step.NOM.SG **po** step.GEN.SG turn.PST.1SG to.PREP DEM.ACC.SG.F distant.ACC.SG.F September.GEN.SG night.ACC.SG

'Taking a small path in the forest, step **by** step I turned into that distant September night (…)'

Units of measuring time may also fill in the position of F and G in the temporal consistency sense of ***po***, as in the following CCLL example:

(164) *(...) vadovauti šimtams žmonių, diena **po** dienos, savaitė **po** savaitės, mėnuo **po** mėnesio statantiems Laiptuotąją piramidę.*

Supervise.INF hundred.DAT.PL person.GEN.PL day.NOM.SG **po** day.GEN.SG week.NOM.SG **po** week.GEN.SG month.NOM.SG **po** month.GEN.SG build.PRS.PA.DAT.PL.M step.ACC.SG.F.DEF pyramid.ACC.SG

'(…) to supervise hundreds of people, day **after** day, week **after** week, month **after** month building the Step pyramid.'

However, modern Lithuanian entails the usage not only of nouns functioning as the denotata of F and G, but also of other parts of speech appearing in rather prolific grammar patterns, namely, *noun **po** pronoun* and *numeral **po** pronoun*, e.g.:

(165) *Plėšia vieną nosinaitę **po** kitos.*

[3.NOM.SG.F] tear.PRS.3SG one.ACC.SG.F napkin.DIM.ACC.SG **po** other.GEN.SG.F

'[She] tears one napkin **after** another.

(166) *(...) vieną **po** kito užėmė kelis musulmonų miestus.*

One.ACC.SG.M **po** other.GEN.SG.M occupy.PST.3PL several.ACC.PL.M muslim.GEN.PL city.ACC.PL

'(…) [they] occupied several Muslim cities one **after** another.'

Thus, the temporal consistency sense of the Lithuanian ***po*** + GEN manifests an important extension from the temporal sequence meaning due

to the same configuration of the entities in a horizontal timeline in the same temporal domain (cf. the change of domains in the temporal sequence meaning as compared to the primary sense of the preposition).

3.2.8 Temporal persistence sense

In addition to the temporal sequence sense, which refers to a set of events that follow each other in a particular order, and the temporal consistency sense, which codes a sequence of events on an ongoing basis, the CCLL data attests to one more meaning of the Lithuanian ***po*** in the temporal domain:

(167) *(...) buvo žadėta – išminuos. Ir **po** šiai dienai nieko (...)*
Be.PST.3 promise.PST.PP.NOM.Sg.F NEG.mine.FUT.3PL and.CONJ **po** DEM.DAT.SG.F day.DAT.SG nothing.NEG.IDEF.GEN.SG.M
'It was promised to lift the minefield (…). And nothing has been done **till** this day (…)'

(168) *(...) viskas buvo likę **po** senovei, gal tik kiek pertvarkyta.*
Everything.NOM be.PST.3SG leave.PST.PA.NOM.PL.M **po** old-time.DAT.SG maybe.ADV somewhat.ADV rearrange.PST.PA.NOM.SG.F
'(…) everything has been unchanged, only perhaps a bit rearranged.'

As shown by the examples, which mainly refer to formulaic, fixed phrases in Lithuanian, the preposition is not associated with temporal development after the moment of speech (cf. the senses of temporal sequence and temporal consistency) but rather with the tenacity of some situation until the moment of speech and possibly afterwards into the future. Even though the situation reflected in the examples above is seen as negative (*nothing has been done*, *everything has been left unchanged*), positive consequences continuing to exist might as well be rendered with the usage of ***po***, e.g. *ji ir **po** šiai dienai graži* 3.NOM.SG.F and.CONJ **po** DEM.DAT.SG.F day.DAT.SG beautiful.NOM.SG.F 'she is (still) beautiful/**till** this day'. In this respect, the use of the preposition with the Dative seems motivated, for it does not contradict Serra-Borneto (1995a quoted in Oakley 2007: 221) who claims that the semantics of the case may involve static relations, as opposed to a dynamic element, which is the underlying key notion of the Accusative.

Consider Figure 11 which offers an approximate graphic representation of the conceptual relation holding between two events, F and G, as coded linguistically by the preposition and represented by the diagrammatic

configuration between the sphere (F) and the dark line (G) along the horizontal timeline running from left (past) to right (future).

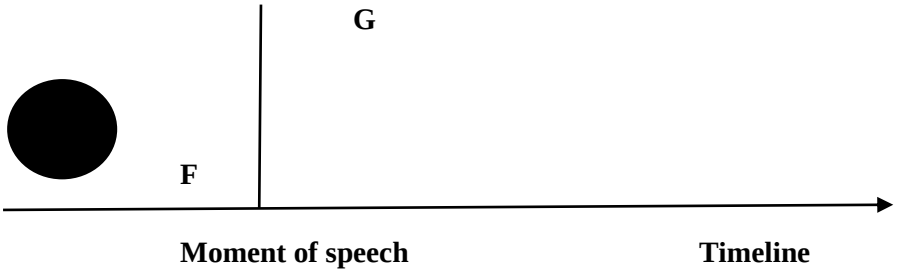


Figure 11. Temporal scene in the temporal persistence sense of ***po***

The temporal persistence sense seems to extend from the temporal sequence sense because of the same F-G succession on the timeline in the same domain. The persistence sense of ***po*** as used with the Dative case in contemporary Lithuanian is very rare in the semantic network of the preposition (0.2% of the instances, see Table 4). According to Zinkevičius (1966: 423, 1981: 192, 1996: 171), it is mainly found in the dialect of Highland Lithuania.

3.2.9 Lateness sense

In addition to the senses of sequence, consistency and persistence in the temporal domain, the Lithuanian ***po*** possesses the lateness meaning, although attested by as few as 0.4% of the CCLL instances with the Genitive (see Table 4). Consider the example below:

(169) *(…) nori pasipriešinti, bet jau **po** laiko, gerokai pavėlavai (…)*
Want.PRS.2SG RFL.resist.INF but.CONJ already.ADV **po** time.GEN.SG noticeable.ADV late.PST.2SG
‘(…) you want to resist, but it is too late, you are too late (…)’

(170) *(…) jis pradės gyventi, jei nepradės gerti. Jei pradės – viskas! **Po** gyvenimo!*
3.NOM.SG.M start.FUT.3SG live.INF if.CONJ NEG.start.FUT.3SG drink.INF if.CONJ start.FUT.3SG everything.NOM.SG.M **po** life.GEN.SG
‘(…) he will start living, if he doesn’t embark on drinking. ‘But if he does, that’s it! His life will be finished!’

However, the usage of the preposition in this sense is not confined only to the Genitive. Consider also as few as 0.1% of the instances with the Dative (see Table 4):

(171) *Ne vieną malką su jais kortų sudilino. Dabar – **po** visam.*
Not.NEG one.ACC.SG deck.ACC.SG with.PREP 3.INS.PL.M card.GEN.PL deal.PST.3SG now.ADV **po** everything.DAT.SG.M
'[He] has dealt out many decks of cards with them. Now, it's over.'

So, ***po*** when employed with both noun cases designates somebody's unpunctuality, incomprehension, or any other negative quality, which continues after the expected or usual time, causing the speaker's annoyance. By way of comparison, the senses of sequence, consistency or even persistence in the temporal domain do not possess such a negative connotation as an inherent feature of their semantic structure. As shown by the CCLL examples, *viskas* 'everything', *gyvenimas* 'life', *laikas* 'time' always take the position of G, emphasizing the graveness of the continuing situation, whereas imaginary or real negative consequences function as F.

Consider Figure 12 which offers an approximate graphic representation of the conceptual relation holding between the two events, as coded linguistically by the preposition and represented by the diagrammatic configuration between the sphere (F) and the dark perpendicular line (G) along the horizontal axis extending from left (past) to right (future).

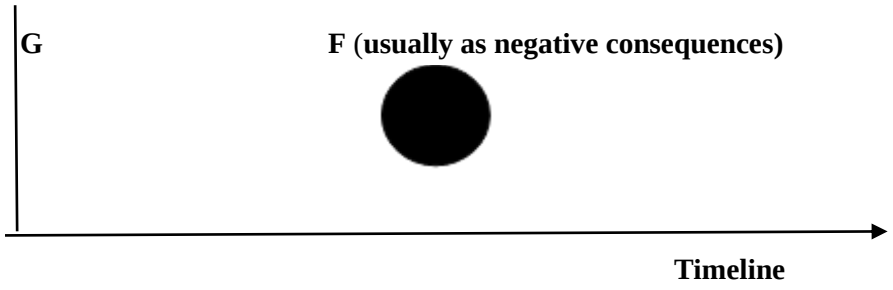


Figure 12. Temporal scene in the lateness sense of ***po***

Thus, the lateness sense of the Lithuanian ***po*** extends from the temporal sequence sense due to the same arrangement of the entities along the horizontal line in the same domain. As to the two noun cases used with the preposition, the Genitive is more prevalent than the Dative; however, even though being frequent in the past, the latter currently appears only in some dialects (Ambrazas 2006: 295-296).

3.2.10 Submission sense

The Lithuanian ***po*** when used with the Instrumental case manifests the submission sense which is found in as few as 0.3% of the CCLL instances, e.g.:

(172) *(...) padėjo savo kūną ir sielą viešpačiams **po** kojomis.*
Put.PST.3SG own.RPOSS body.ACC.SG and.CONJ soul.ACC.SG god.DAT.PL **po** foot.INS.PL
'(…) [he] put his body and soul **under** the gods' feet.'

(173) *(...) Džensenas, kurį Sintija pamynė **po** padu (...)*
Jensen.NOM.SG who.ACC.SG.M Sintija.NOM.SG step.PST.3SG **po** sole.INS.SG
'(…) Patrick Jensen, who appeared **under** Sintija's thumb (…)'

As illustrated by the corpus data, the sense under study entails the location of F with respect to G as a geometric reference, i.e. the position of 'zero', on the negative value of the vertical axis. Therefore, the configuration of the entities is similar to that of such concrete senses as the primary sense, personal space and direction. However, this type of construal does not stipulate that one entity is literally under the other. Rather, it entails their arrangement in terms of metaphorical verticality, when F accepts or yields to a superior force, will or authority of a person functioning as G. Thus, the underlying motivation for the present semantic structure is the orientational metaphor BEING SUBJECT TO CONTROL OR FORCE IS DOWN (Lakoff and Johnson 1980/2003; Kövecses 2010). The foregrounding of the submission element is enabled by proximity, as the entities must be in a relatively short distance away from each other to be able interact in the aforementioned way. Therefore, the submission sense of the Lithuanian ***po*** + INSTR seems to directly stem from the personal space sense of the preposition used with the same noun case. Somebody's *kojos* 'feet' or *padas* 'sole' always function as G, whereas another human body may take the position of the entity to be located. Furthermore, contextual clues may help to corroborate the hypothesis of G which is domineering with respect to F. Consider, for instance, the verb *paminti* 'trample **upon**/step **over** smb' making a fixed expression with ***po*** in contemporary Lithuanian – *paminti **po** padu* 'be **under** somebody's thumb'.

3.2.11 Annoyance sense

Another sense of the Lithuanian ***po*** in the non-physical domain refers to annoyance expressed by the speaker who tells in a rude way to go away or

be quiet, in other words, emphasizes dissatisfaction with the existing situation by using swear words. Consider the following CCLL examples with the preposition when employed with the Instrumental case (1.8% of the instances, see Table 4):

(174) *(...) jaučiau tik ledinio vandens šaltį. Ką* ***po*** *galais aš padariau?*
Feel.PSt.1SG only.CONJ freezing.GEN.SG.M water.GEN.SG cold.ACC.SG what.ACC **po** end.INS.PL 1.NOM.SG do.PST.1SG
'(…) I felt just the cold of freezing water. What on earth did I do?'

(175) *Tas Trentas klausosi akimis, ausimis ir nosimi –* ***po*** *perkūnais, jis klausosi net smakru.*
DEM.NOM.SG.M Trentas.NOM.SG listen.PRS.3SG eye.INS.PL ear.INS.PL and.CONJ nose.INS.SG **po** thunder.INS.PL 3.NOM.SG.M listen.PRS.3SG even.ADV chin.INS.SG
'That Trentas listens with his eyes, ears and nose, sod it, he even listens with his chin.'

However, the corpus analysis shows that ***po*** is not confined to the Instrumental only. Consider the following CCLL examples with the Genitive (1.8% of the instances, see Table 4):

(176) *(...) iš krūmyno pamažu išniro didelės ausys. –* ***Po*** *velnių, ko žmones gąsdini?!*
From.PREP shrubbery.GEN.SG slow.ADV appear.PST.3PL large.NOM.PL.F ear.NOM.PL **po** devil.GEN.PL what.GEN person.ACC.PL freighten.PRS.2SG
'(…) large ears appeared slowly from behind the bushes. Go to blazes, why are you freightening people?!'

(177) *(...) išeina į gonkas parūkyti –* ***po*** *pelių! – pašaro nebėr!*
Leave.PRS.3SG to.PREP veranda.ACC.PL some.INF **po** mouse.GEN.PL fodder.GEN.SG NEG.be.PRS.3SG
'(…) [he] goes to the veranda for a smoke, sod it, there is no fodder left!'

(178) *Bet ką,* ***po*** *šimts ryklių, ponas Bjaurėnas turi bendra su visu tuo?*
But.CONJ what.ACC **po** hundred.GEN.PL shark.GEN.PL mister.NOM.SG Ugly.NOM.SG have.PRS.3SG common.NA with.PREP all.INS.SG.M DEM.INS.SG.M
'But what the devil does Mr. Ugly have to do with all that?'

As we can see, such Lithuanian swear words that involve the usage of ***po*** metaphorically refer to the very down region of the negative value of the vertical axis and even beyond it, which is usually conceived as hell in Lithuanian folklore. It may be referred to by *galai* 'ends', or by the names of

its inhabitants, such as *velniai*, *paraliai*, *biesai*, all functioning as synonyms for the devil in various dialects, the god of hell and death. Interestingly, *perkūnas* ‘thunder’, which is documented as the Baltic god of thunder that is capable of pursuing the devil, his main opponent in Lithuanian mythology, may also be referred to on such occasions. However, unpleasant pests, for instance, *pelės* ‘mice’, typically living underground and active in twilight, and even dangerous creatures, for instance, *rykliai* ‘sharks’, lurking under water for unwary swimmers, can also appear in the position of G to express one’s irritation with the existing situation. Therefore, such swear words may be regarded as a metaphor of the negative (BAD IS DOWN); hence a direct relationship with the primary sense, and the speaker using them hopes that all these creatures, both real and imaginary, will change the existing situation.

3.2.12 Truth sense

The Lithuanian ***po*** when used with the Dative exhibits the truth sense related to non-physical space (0.2% of the instances, see Table 4) in following CCLL example illustrating a fixed phrase in contemporary Lithuanian:

(179) *Jis gūžtelėjo pečiais ir paraudo. – **Po** teisybei, aš pavargau veltėdžiauti (...)*
3.NOM.SG.M shrug.PST.3SG shoulder.INS.PL and.CONJ blush.PST.3SG **po** truth.DAT.SG 1.NOM.SG tire.PST.1SG scrounge.INF
‘He shrugged his shoulders and blushed. To tell the truth, I got tired of scrounging.’

As we can see, the preposition in this sense combines with *teisybė* ‘truth’ acting as G, while the truth revealed (*aš pavargau veltėdžiauti* ‘I got tired of scrounging’) constitutes F. The usage of the item is not surprising, for the two entities, like in the primary sense, are conceptualized as situated along the negative value of the vertical axis. Thus, only a change in the domain, which might result from an abstract type of F and G, presupposes the emergence of a new semantic structure directly related to the primary sense.

3.2.13 Distributive quantity sense

The distributive quantity sense, which is found in 6.2% of the instances in the CCLL, constitutes the final meaning of the Lithuanian ***po*** + ACC associated with non-physical space, e.g.:

(180) *Tada abudu nunešė **po** keletą baslių ir sumetė į vežimėlį.*
Then.ADV 3PL.TWO.NOM.M take.PST.3PL **po** several.ACC.PL.M stake.GEN.PL and.CONJ throw.PST.3PL to.PREP cart.DIM.ACC.SG
'Then they took several stakes each and threw them into a small cart.'

(181) *(...) į tas tolimas ir pavojingas keliones siųsdavo **po** du vairuotojus, paskui ėmė taupyti (...)*
To.PREP DEM.ACC.PL.F distant.ACC.PL.F and.CONJ dangerous.ACC.PL.F trip.ACC.PL send.HAB.PST.3SG **po** two-NOM.PL driver.ACC.PL later.ADV start.PST.3SG economize.INF
'(…) [they] would send two drivers to those distant and dangerous trips, but later started to economize (...)'

(182) *(...) sklypai gal **po** tūkstantį arų.*
Site.NOM.PL maybe.ADV **po** thousand.ACC.SG are.GEN.PL
'(…) sites of maybe 1,000 ares.'

A numeral and an ellipsis (the omission of a noun) or an ellipsis (the omission of a numeral) and a noun constitute two more prolific grammar patterns in contemporary Lithuanian with ***po*** in this sense, e.g.:

(183) *(...) gavome čekį 1500 markių, **po** 500 kiekvienam.*
Receive.PST.1PL cheque.ACC.SG 1500 mark.GEN.PL **po** 500 each.DAT.SG.M
'(…) we received a cheque for 1500 marks, 500 for each.'

(184) *Eikim išlenkti **po** taurelę, – tariau.*
Go.IMP.1PL drink.INF **po** cup.DIM.ACC.SG say.PST.1SG
'Let's go for a shot, I said.'

Grammar patterns with the preposition preceding pronouns and adverbs are also found, as in the following CCLL utterances, which signal the gradability of the sense, which typically pertains to physical space but can also signal entail relations in the non-physical domain:

(185) *Perskaičiau **po** kelis kartus.*
Read.PST.1SG **po** several.ACC.PL.M time.ACC.PL
'I have read it several times.'

(186) *Ir Antanas ėmė **po** truputėlį puikti.*
And.CONJ Anthony.NOM.SG start.PST.3SG **po** little.ADV peacock.INF
'And Anthony started to slowly become arrogant.'

As we can see, ***po*** designates the dealing of a share, which usually refers to a wide range of countable entities, e.g. stakes, marks, ares, shots, or people, all acting as G, to each member of a group, the position of which is typically taken by concrete entities, e.g. people, sites, or actions, for

instance, going for a drink, taking, sending, etc. Therefore, the meaning seems to be most closely related to the pervasion sense pertaining to physical space, whose most prominent element is the spreading widely throughout an area functioning as G (cf. Ambrazas 2006: 297). Moreover, a dynamic element, which is pointed out by Serra-Borneto (1995a as quoted in Oakley 2007: 221) as one of the key notions of the Accusative, does not contradict the semantic structure not only in pervasion but also in distributive quantity. As attested by the CCLL examples above, the hypothesis of a pattern of activity is confirmed by such action verbs as *išlenkti (taurelę)* 'drink (a shot)', *nunešti* 'take from one to another place', *siųsti* 'send', or *skaityti* 'read'. However, total affectedness, as highlighted by Luraghi (2009: 145), seems to gain importance only for the pervasion sense of the preposition, because in the distributive quantity sense, it is a segment of the imaginary whole (several stakes from a heap of stakes, two drivers from a number of drivers working for the same company, sites of 1,000 ares from a larger area of land, 500 marks from a bigger amount of money, and a shot from a series of shots on a drinking binge) rather than the undiminished entirety that is emphasized. Thus, a shift in the characteristics of G presupposes a different type of functional interaction, constituting the key element of the distributive quantity sense of the Lithuanian ***po***.

3.2.14 Semantic networks

Figures 13-14 illustrate two semantic networks of the Lithuanian ***po***, as attested by its usage types in the CCLL. Figure 13 covers the senses of the preposition as employed with the Genitive, the Dative, and the Instrumental, while Figure 14 presents the remaining two senses when the preposition is used with the Accusative. In both pictures, concrete senses are represented by black spheres, while abstract ones are empty circles. The arrows indicate their relationships. The noun cases that each sense of ***po*** governs are given in brackets.

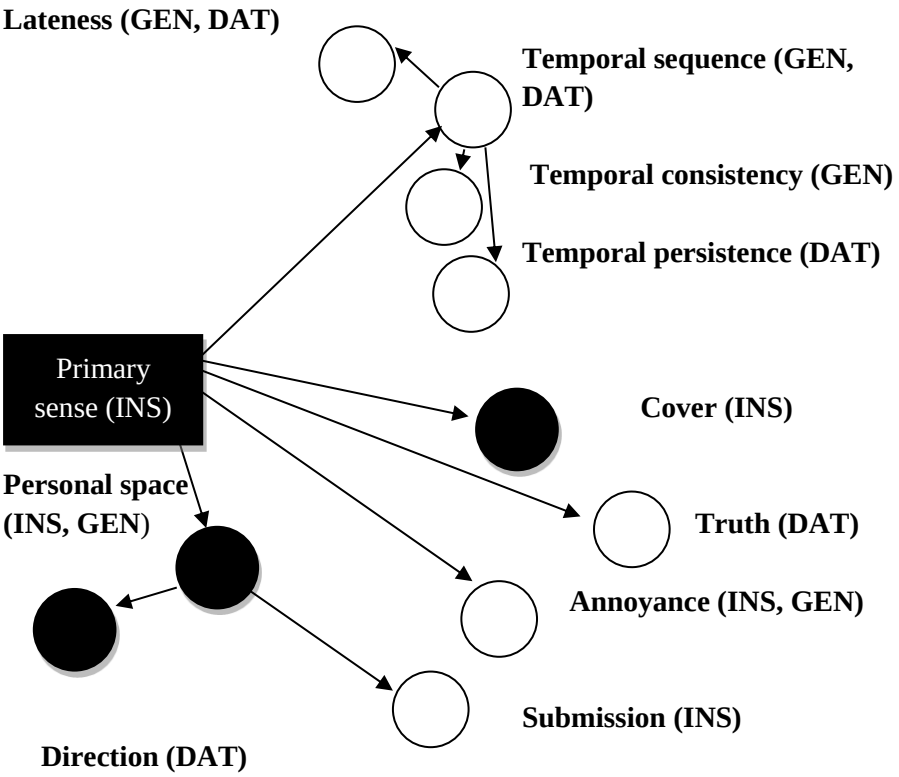


Figure 13. Semantic network of ***po*** + GEN, DAT, INS

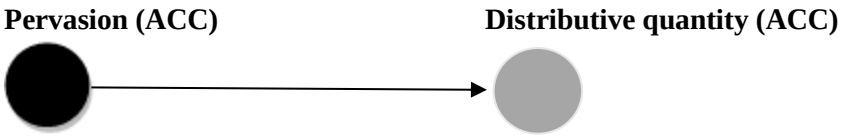


Figure 14. Semantic network of ***po*** + ACC

As shown by Figure 13, on the basis of the proto-scene, implying purely geometric content (F directly underneath G), the primary sense of ***po*** + INS is defined, which is further applied to categorizing new pieces of experience. First, it constitutes the basis for cover (***po*** + INS), which is determined by a shift in the size and dimensions of G, i.e. from an entity which is conceptualized as a line or a point to a relatively large two-dimensional object capable of (potentially) covering F. However, since the sense entails an elevated G with respect to F in the majority of corpus sampes, the vertical axis is still retained. Other extensions pertaining to physical space, namely, personal space (***po*** + INS, GEN) and direction (***po*** + DAT), manifest the

foregrounding of the element of a short distance away but still within the region of G, for F is not literally under G in both cases but still lower than it.

As to senses associated with non-physical space, in addition to a shift in the characteristics of F and G, a change in the axis, from vertical to horizontal, is important for the four temporal senses. The temporal sequence sense (***po*** + GEN / DAT) stems from the primary sense, retaining the succession of the entities characteristic of the proto-scene in a temporal domain as well, and can be interpretable via the conceptual metaphor TIME IS SPACE. The remaining senses, such as temporal consistency (***po*** + GEN), temporal persistence (***po*** + DAT), and lateness (***po*** + GEN / DAT), seem to derive from the temporal sequence sense keeping the same succession of F and G in the same domain. On the other hand, a shift in the domain plays a major role not only in the sense of submission, which is explicated via such conceptual metaphor BEING SUBJECT TO CONTROL OR FORCE IS DOWN, but also in annoyance, and truth, where metaphorical scales of verticality are also retained. So, space is given here a broad interpretation and includes, apart from physical, also that of emotional perception and a number of other spaces (see the Mental Space Theory in Fauconnier 1985, 2007). However, the submission sense seems to be related to the primary sense via personal space sense, while annoyance and truth do not possess any links with other senses of the preposition.

Figure 14 illustrates two more senses of the preposition, namely, ***po*** + ACC, forming a different semantic network. Pervasion exhibits a shift in the axis, from vertical to horizontal, and requires F which randomly moves all over G as a single object or a multiplex entity. The sense acts as a direct derivational basis for distributive quantity, which also involves a dynamic aspect and the same axis. The sphere is made grey in Figure 14 in order to signal the gradability of the sense, which can pertain not only to physical but also to non-physical space. In the dissertation, the last two senses are tentatively considered to have no clear motivated links with the proto-scene of the preposition + INS.

Thus, what are considered to be distinct senses of ***po*** are in fact directly or indirectly derived either from the primary sense or the sense of pervasion and have become part of the semantic networks as representational devices of linguistic usage.

3.3 ***Below***

This section focuses on the senses of the English ***below*** and their motivated interrelations in a semantic network. In order to achieve this purpose, 1,000

instances with the preposition have been selected for analysis out of a total of 2,047 utterances of adverbial and prepositional usage in the fiction register from the BNC (see Table 1). Consider Table 8 which displays the frequency of instantiation of concrete and abstract senses of the preposition, as distinguished in the corpus data:

Table 8. Senses of ***below*** (absolute and relative frequencies)

Senses	No of samples	Total	Grand total
1. Primary	916/91.6%	929/92.9%	1,000/100%
2. Geography	13/1.3%		
3. Measurement	32/3.2%	71/7.1%	
4. Value	39/3.9%		

As shown in Table 8, ***below*** profiles two types of relations: two in physical space (concrete senses 1 and 2) and two in non-physical space (abstract senses 3 and 4). As Langacker (1987) observes, the more frequent an item, the more senses it is prone to develop (see also Taylor 1998: 309). Thus, the relatively low occurrence of the preposition in the corpus correlates with its rather simple semantic structure. As to the relationship between concrete vs. abstract senses (92.9% vs. 7.1%, see Total), it illustrates preference for extensions in the physical domain, a factor which may facilitate the derivation of the multiple senses of its highly productive close synonym ***under*** in the non-physical domain (for more ideas on the influence of the neighbouring or contrasting categories on the extension of a category, see Lakoff 1982: 17). Also note the relationship between concrete senses 1 and 2, displaying a preference for sense 1 (91.6% vs. 1.3%), which entails the meaning element of negative verticality, also inherent in the semantic structure of the corresponding adverb.

The semantic peculiarities of the English ***below***, as attested by the BNC data, are discussed in the following manner. First, the primary sense is established and its extensions associated with physical and non-physical space are examined. Next, semantically motivated relationships between the senses, or use types, that differ in status are highlighted in the form of a network.

3.3.1 Defining the primary sense

3.3.1.1 Key components of the proto-scene

Figure 15 offers an approximate graphic representation of the conceptual spatial relation holding between F and G, as coded linguistically by the English ***below*** and presented in the proto-scene by the diagrammatic configuration between the sphere (F) and the dark line (G).

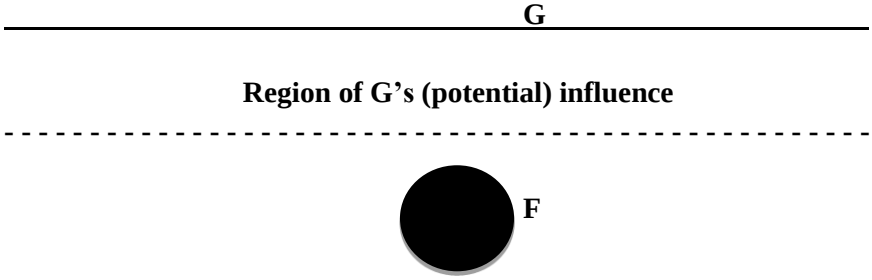


Figure 15. Proto-scene for spatial scenes with ***below***

The BNC data attest to several features characteristic of the proto-scene above. First, F is located lower than but not necessarily beneath G in Euclidean space along the negative value of the vertical axis, which is in line with the primary sense of the Lithuanian ***žemiau***, e.g.:

(187) *(...) muscles clenched **below** the rolled-up sleeves (...)*

(188) *(...) he drawled with a cool gesture from one strong tanned hand before replacing it **below** his hard jaw.*

(189) *(...) each paper cylinder hovers **below** their nostrils (...)*

In the examples, G, which is reduced to a point or a line by the construer of the situation, becomes a means of referencing, i.e. the position of 'zero', and is determined by the speaker's eye level, hence the bold line in Figure 15. Moreover, whether this entity is porous or non-porous, a composite object or a continuous mass, is excluded from the description of the proto-scene. In the majority of the BNC examples, it is the lower edge of some entity, e.g. sleeves, somebody's jaw or nostrils, etc., that is referred to by means of background world knowledge. Interestingly, ***below*** may also explicitly confine F below the lower part of G, entailing biased G geometry (Talmy 1983) or profiling (Langacker 1987), which is attested by combinability patterns with 'the bottom of' or 'lower part of'. However, in the BNC, such examples are not frequent and usually found in other registers rather than fiction (cf. the primary sense of the Lithuanian ***žemiau***), e.g.:

(190) *In an ideal world, the top of the canister should be just* ***below*** *the bottom of the tank (…)* (magazine)

(191) *The nucleus lies* ***below*** *the bottom of the picture (…)* (non-academic)

There is also a possibility of making the upper part of G as a means of referencing in the primary sense of ***below***, for instance:

(192) *(…) a balcony - a flat, unwalled slab that projected from a wide opening just* ***below*** *the top of the wall.*

Thus, the examples emphasize the importance of a specific spatial arrangement between the two entities, rather than which part of G becomes salient, i.e. conceptually highlighted. F, which is reduced to a point, designates the boundary of vertical space, coinciding with its bottom at the lower end. In other words, the spatial configuration of the two entities presupposes the extension of space along the negative value of the vertical line. Second, the conceptual spatial relation denoted by ***below*** does not imply contact between F and G. Therefore, graded distance between the entities becomes another meaningful component of the proto-scene, which is attested by the frequency of collocations denoting short and/or long distance. For instance, the BNC data is prolific with such modifiers as *slightly*, *a little*, *immediately*, *directly*, attesting to short distance, as well as *well* and *far*, emphasizing longer distance between F and G:

(193) *(…) Mrs Clamp said, shaking her head inside the fridge, slightly* ***below*** *the height of the ice-making compartment.*

(194) *He probably inspected the area when the water had fallen well* ***below*** *the starlings.*

Various units of measurement denoting the exact length of space (e.g. inches, metres, feet, levels, floors, stairs, etc.) are also encountered with ***below***, signalling the importance of segregating the two entities conceived as boundaries of vertical space, for instance:

(195) *(…) to reveal the surface of the space station, now only a hundred metres* ***below*** *the shuttle.*

(196) *Manescu estimated they must by now be three levels* ***below*** *the surface of the earth.*

(197) *The old man – General Midwinter – has got a private suite at seven floors* ***below*** *ground level.*

Finally, the proto-scene with ***below*** presupposes the absence of functional (Vandeloise 1991, 1994), or extra-geometric (Coventry *et al.* 2001), interaction. In other words, G cannot affect F, hence the punctured line in Figure 15, distinguishing G's region of potential influence. In other words, the preposition merely divides the proto-scene into two spatially

discontinuous geometric regions, when one such portion is conceived as lower than the other on the negative value of the vertical measurement line. Therefore, such sentences are found in texts where geometric descriptions are of utmost importance. By way of comparison, consider functional interaction between the entities in the semantics of the seemingly close English synonym ***under***, attesting to different construals of the same state of affairs, e.g.:

(198) *I went **under**/*__below__ the table (…)*

In the example above, ***under*** may entail cover due to the two-dimensional surface acting as G, so ***below*** is incorrect in this case, for it merely highlights the spatial configuration of the entities without any functional outcomes. When the prepositions can be used interchangeably, they evoke disparate construals of the same spatial scene, and it depends on the speaker which of them to select, cf. *a skirt **below**/**under** the knees*. In case of ***below***, the place of a skirt may be conceptualized as undefined, while ***under*** signals that the garment and the knees are necessarily successively arranged along the vertical axis.

Thus, the alignment of contact-free F and G on the negative value of the vertical axis and the absence of functional interaction between them constitute the key components of the proto-scene involving the conceptual spatial relation denoted by the English ***below***. Moreover, construing the spatial scenes may entail both intrinsic and relative frames of reference without any semantic consequences. In the present analysis, this type of proto-scene defines will be referred to as the typical, most representative, or primary sense of the preposition. However, the diachronic criterion, which Tyler and Evans (2003: 123) highlight as one of the most important for primary sense identification, by relating ***below*** to Gothic *be + low* and Old Norse *be + lagr* 'to be prostrate', its etymologically earlier concrete sense, does not seem to play a major role in the present semantic analysis. Rather, on the basis of the BNC data, the typicality of this sense is mainly attested by two closely interrelated criteria: (1) the physical aspect, and (2) the frequency of instantiation in the corpus, both of which will be discussed in more detail in the forthcoming section.

3.3.1.2 Types of F and G

As far as the frequency of the English ***below*** in the primary sense is concerned, it is illustrated in Table 8, which constitutes 91.6% of the instances in the BNC corpus sample, in comparison to 1.3%, 3.2% and 3.9%

pertaining to its other senses. Table 9 below shows different types of F and G in the present semantic structure.

Table 9. Types of F and G in the primary sense of ***below*** (absolute and relative frequencies)

G / F	Human body	Concrete object	Abstract entity	Total 2
Human body	110/12%	117/12.8%	4/0.4%	231/25.2%
Concrete object	222/24.2%	351/38.3%	3/0.3%	576/62.9%
Action/ process	17/1.9%	17/1.9%	1/0.1%	35/3.8%
Abstract entity	33/3.6%	29/3.1%	12/1.4%	74/8.1%
Total 1	382/41.7%	514/56.1%	20/2.2%	916/100%

As seen from Table 9, the physical aspect of the primary sense of ***below*** is mainly determined by the nature of G. In other words, human morphology and any other concrete object usually take its position. However, even though studies of conceptual metaphor show that reasoning about the world is based on our bodily experience (Lakoff and Johnson 1980; Lakoff 1987; Kövecses 2010; see also Gibbs 2006: 9; Rohrer 2007: 25-47), concrete entities significantly outnumber the human body as G in the proto-scene above (56.1% and 41.7%, respectively, see Total 1). Furthermore, abstract objects may also be selected as reference entities in spatial scenes characterized by purely geometric content, i.e. the absence of functional interaction between F being lower but not necessarily straight under G. However, the number of such instances is significantly lower in comparison with utterances illustrating human morphology and concrete objects in the position of G (2.2%, see Total 1). Actions/processes functioning as reference entities have not been encountered in the corpus data, so they are not included in the table.

As regards the overall frequencies of types of F, the location of which is rendered with respect to the human body, any other concrete object, or even an abstract entity as G, concrete objects account for the largest number of samples, whereas human morphology takes the second place in the BNC data with ***below*** (62.9% and 25.2% of the instances, respectively, see Table 9). Action/processes and abstract entities are found in a significantly fewer

number of utterances (3.8% and 8.1% of the instances, respectively, see Table 9).

A few words should be said about specific F-G alignments in the BNC concordance lines with ***below*** in the primary sense. For instance, various human body parts, e.g. skin, cheekbones, jaws, shoulder blades, ankles, knees, feet, heart, waist, navel, bosom, nostrils, eyes, brows, forehead, hands, etc., typically function as the G:

(199) ***Below*** *the knees her calf muscles stood out like grapefruits inside her stockings.*

(200) *(…) Alexei's shield was bathed in yellow* ***below*** *the waist.*

(201) *(…) a sharp pain, on his left side and* ***below*** *his ribs (…)*

The examples above also illustrate major types of F with ***below*** in the primary sense when human morphology functions as G. First of all, the location of other body parts is determined in this way, hence the use of hands, fingers, eyes, breasts, hair, curls, tuft, mouth, skin, bones, muscles, etc. (12% of the instances, see Table 9). Another person may also constitute F, the downwards location of which is determined with reference to somebody:

(202) ***Below*** *her was the corpse of a woman (…)*

Among the examples, there are utterances with entities in the position of F when they cannot be separated from the body, e.g. fistulas, swellings, wounds, bruises, marks, scars, hollows, etc., for being inherently relational, requiring G of which they constitute as an integral part, as in the following:

(203) *He corrupted the surgeon Battista da Vercelli, who was to treat a fistula just* ***below*** *the Pontiff's left buttock (…)*

(204) *Gobbets of pinkish-grey matter exploded from the exit wound* ***below*** *the right shoulder blade.*

(205) *There was an area of bruising* ***below*** *the right eye (…)*

Other concrete objects, when used with the human body as G, are also employed in the position of F (24.2% of the instances, see Table 9). They mainly include miscellaneous entities, among which landmarks in the landscape, both man-made, e.g. harbours, piers, houses, courtyards, columns, camps, parks, or natural, for instance, stones, bays, plains, seas, fields, forests, rivers, are in the majority, e.g.:

(206) *They were passing over North Gate Bridge, and* ***below*** *them the River Lee flowed on to Cork harbor (…)*

Another prevailing type of F to be located with respect to the human body refers to garments, e.g. dresses, jeans, skirts, trousers, or their constituent parts, which are frequently conceptualized as long objects; hence the

relevance of an encompassive secondary reference object as in some instance of ***žemiau*** in the primary sense (Talmy 1983: 245-246):

(207) *(…) her nightdress extends far **below** her feet (…)*

(208) *(…) white breeches tied **below** the knee.*

Other examples illustrating types of F should also be taken into consideration so as to give a broader picture of the present semantic structure of ***below***. Consider, for instance, actions/processes or abstract entities, the location of which might be determined with reference to the human body. As shown in Table 9, such types of F are G appear in 1.9% and 3.6% of the instances, respectively, and include human character features (e.g. impatience, respect, warmth, compassion), attributes of appearance (e.g. beauty), feelings and emotions (e.g. disbelief), sound (e.g. wail, cry), smell (e.g. stench), all being classified as abstract entities, whereas such contextual clues as *hit, bite, think, movement, fighting, comings and goings*, etc. refer to actions/processes that need to be localized:

(209) *I was aware that the threshold of the audience's suspension of disbelief lay far **below** mine (…)*

(210) *I did most of my thinking **below** the neck in those days.*

(211) *(…) from the hushed voices of the nursery staff and from the comings and goings far **below** her in the great house.*

However, such types of Fs, both abstract and with a dynamic element, when in spatial alignment with respect to human morphology, do not affect the interpretation of ***below*** in the primary sense. In other words, what remains important for the comprehension of the conceptual spatial relation denoted by the preposition is the geometric content associated with that sense, i.e. the absence of functional engagement between F being located lower in an undefined place with respect to G.

On the other hand, the physical aspect of the primary sense of the English preposition is manifested when not only the human body but also other concrete objects feature as reference entities. Consider the following BNC examples with various types of Fs, the spatial configuration of which does not affect the established elements of the semantic structure under study:

(212) *(…) I was bending down with my head **below** the counter as if to be tidying things there.*

(213) *(…) chattering in the courtyard **below** her window.*

(214) *She looked down at the bold black signature and the printed words **below** it (…)*

(215) *The air of excitement was as great **below** stairs as it was above.*

(216) *He rummages deep in his plastic bag, **below** a loaf of white bread and the fruit from a Chinese greengrocer.*

Example (212) illustrates human morphology as F in this type of spatial relationship (12.8% of the instances, see Table 9). In examples (213)-(214), another concrete object takes the position, either conceptually distinct, such as courtyards, or an integral part of another entity, e.g. a signature and words on a piece of paper (38.3% of the instances, see Table 9). Finally, examples (215)-(216) manifest abstract objects, such as the air of excitement, and actions/processes, e.g. rummaging, the location of which is determined with respect to G as a concrete object. Other utterances with an abstract type of F include such contextual clues as drama, talent, silence, blindness, darkness, warmth, traffic noise, a memory of imprisonment, irritation, longing, etc, while the verbs *take pictures*, *hit*, etc., illustrate actions/processes in the BNC data with the English preposition (3.1% and 1.9% of the instances, respectively, see Table 9).

Interestingly, the position of G in the primary sense of ***below*** might be taken not only by the human body or concrete objects but also by abstract entities, which makes it different from the corresponding Lithuanian preposition. The following BNC example has the abstract type of G when used with abstract entities acting as F, which constitutes the most frequent type of F-G combination (1.4% of the instances, see Table 9):

(217) *(...) a note of anger simmering just **below** his voice (...)*

The abstract type of G when employed with human morphology and concrete objects in the position of F constitutes the second type of combination in terms of frequency in the primary sense of ***below*** (0.4% and 0.3% of the instances, respectively, see Table 9), e.g.:

(218) *(...) his arm **below** that pain was completely numb (...)*

(219) *(...) two webs of silvery trails that extended far above and **below** the lines of sight afforded by the shuttle's windows.*

Finally, actions/processes may also combine, though very rarely, with an abstract entity as G in the primary sense of the English preposition (0.1% of the instances, see Table 9):

(220) *I whisper to her, **below** the hissing of the windscreen wipers.*

Thus, in the light of the major components of the proto-scene involving the spatial relationship designated by ***below***, vertical bounded space is retained in all the examples with different types of F and G. Moreover, the preposition is considered to have purely geometric content conventionalized in its primary sense, the typicality of which is attested by the frequency of instantiation and a concrete type of G, either human morphology or any other concrete object. However, an abstract G is not ruled out, either, which

makes the preposition under study different from the Lithuanian ***žemiau***. Further in the analysis, it will be shown how less typical senses, both concrete and more abstract, are related to the primary sense by exploiting and transforming it in different ways, i.e. the underlying principle of motivated polysemy will be taken into consideration. First, ***below*** as confined to concrete senses will be discussed, and then the analysis will proceed to the more abstract senses of the English preposition**.**

3.3.2 Geography-related sense

Another concrete sense of the English ***below***, which is found in as few as 1.3% of the instances in the BNC (see Table 8), consists of semantic elements which are both uniform and varying in comparison with the proto-scene. Figure 16 graphically represents the sense which mostly refers to geographic descriptions (cf. the topographical-distance sense in Tyler and Evans 2003: 130).

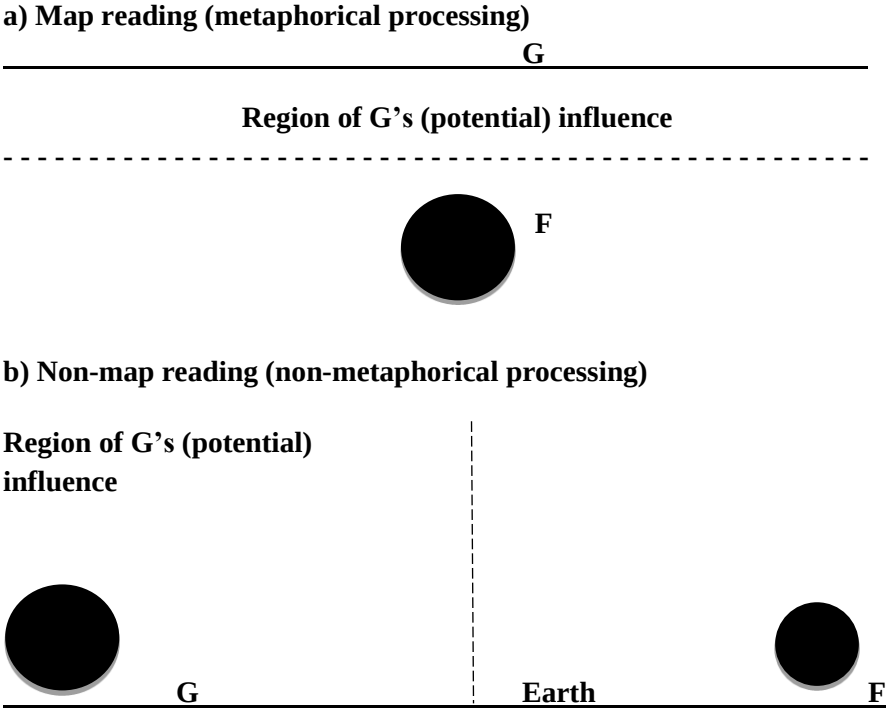


Figure 16. Spatial scene in the geography-related sense of ***below***

As shown by Figure 16, it seems that F may be located with respect to G in Euclidean space on either horizontal or vertical axes, depending on the vantage point, which prompts the gradability of the sense under study, e.g.:

(221) *Secret Intelligence Service managed a small boat-hire yard on the Thames **below** Oxford.*

(222) *Ward told him about the two diversions **below** Chilete and the need to switch to the old road (…)*

On the one hand, the schematic representation of the spatial scenes above seems to involve a vertical measurement line if the arrangement of F and G is conceived as similar to the positioning of entities on maps (see map reading (a) in Figure 16). In other words, Thames and diversions are conceptualized as lying south from Oxford and Chilete, respectively; hence large-scale space or 'earth-based geometry' or 'earth-associated space', implying the four geographic orientations, in the semantic description under study (Talmy 1983: 244-245). Since people think of north as 'up' and south as 'down', a map reading prompted by such examples during conceptualization may be treated as a metaphor of an area (cf. the UP-DOWN axiology as a metaphor in Lakoff and Johnson 1980/2003). Consequently, geographical descriptions seem to illustrate a metaphorical extension of the primary sense of ***below***.

On the other hand, another way of spatialy aligning entities in extra-linguistic reality (non-map reading (b), see Figure 16) may seem plausible as well. In other words, Thames, diversions acting as F may be conceptualized as situated along the horizontal axis with reference to Oxford, Chilete in the position of G; hence small-scale space as it can be grasped by the speaker unaided by any optical instruments. So, this type of construal does not stipulate that the river literally flows under Oxford or roads are "buried" under Chillete. Rather, it seems to make an element of verticality backgrounded, but still implicitly inferred by conceptualizing G as an elevated entity with respect to F on the horizontal axis. However, as in case of the primary translation equivalent ***žemiau***, even though the non-map reading of spatial scenes involving topographical entities may look entrenched in the semantic structure of ***below***, such an interpretation can convincingly be refuted. Namely, the place of F, whose compositionality and other geometric parameters, such as shape and size, are irrelevant, is even less clear in geographical descriptions as compared to its undefined localization coded by the primary sense of the preposition. However, G as a geometric reference, or the position of 'zero' (see the larger sphere as compared to F in Figure 16b) must still function as an object below which F constitutes the boundaries of vertically extended space. Otherwise, like in

Lithuanian, ***below*** in such contexts would be inappropriate due to the use of language means associated with the horizontal axis, e.g., ***in front of*** / ***behind***, *on the right* / *on the left*, etc.

As attested by the BNC data, the position of G in the geography-related sense of the English preposition is typically taken by such concrete entities as cities, villages as well as mountains, hills, enclosures, vineyards and other salient landmarks in the environment. As to F, it usually designates such concrete objects as villages, roads, streets, plantations, valleys, rivers, lakes, trees, buildings, etc.

The corpus data also shows other elements of the geography-related sense of ***below***. As in the primary sense, the second semantic element pertains to the apparent absence of contiguity between F and G. This is clearly manifested by the frequency of the adverbs *far, just, immediately* appearing with the preposition even though there is always an element of subjectivity or 'plasticity' in what counts as proximal or distal:

(223) *(…) the suburbs in the valley far* ***below*** *the ancient hill settlement forming the historic core of the city.*

Various units of measurement denoting specific distance (e.g. miles, etc.) are also encountered with the preposition, signalling the importance of segregating the two entities conceived as boundaries of extended space in the postulated sense:

(224) *Three miles* ***below*** *the village they came upon the first of the hallowed plantations of Father Noah.*

Finally, in addition to the alignment of contactless F and G along the vertical axis, the absence of any functional interaction between the entities constitutes the last semantic element in the geography-related sense of ***below***. In other words, G cannot affect F; hence the punctured line in Figure 16, separating G's region of potential influence from the location of F below or ahead of it. In this sense, the preposition merely divides the spatial scene into two discontinuous portions, where one of them is conceptualized as lower or ahead with respect to the other on the negative value of the vertical axis.

Thus, negative verticality, which is metaphorically inferred (see map reading), in addition to the absence of functional interaction between contact-free F and G, are the key elements of the geography-related sense of the English ***below*** and make it directly derived from the primary sense. In terms of relational features at a higher level of conceptualization (see Wege 1991: 279), the sense illustrates the schema of place or rest, as opposed to that of motion or path (Jackendoff 1983). As to selectional features, i.e. the dimensionality, size and internal structure of the entities, are irrelevant for

the semantic description under study (cf. Rauh 1988 quoted in Wege 1991: 279). Moreover, construing the spatial scenes may require both intrinsic and relative frames of reference.

3.3.3 Measurement sense

In addition to the primary and the geography-related senses, both of which refer to the physical domain of human experience, the English ***below*** also manifests a sense that entails measuring vertical distance from some arbitrary reference level in a more abstract domain (3.2% of the instances, see Table 8; cf. the less sense in Tyler and Evans 2003: 128):

(225) *It just sank slowly and steadily **below** the ocean's horizon (…)*

(226) *(…) temperatures **below** zero (…)*

In example (225), the preposition is used in the primary sense, for the lower location of some entity is determined with respect to a concrete object (the ocean), acting as a means of referencing. Example (226), in which a thermometer as an artefact is metaphorical, on the contrary, illustrates the measurement sense, as not only F (the temperature) but also G is abstract, the latter of which explains the experiential shift away from the domain of physical space. The change is motivated by the tight correlation between quantity and vertical elevation, i.e. the LESS IS DOWN and MORE IS UP metaphor (see Tyler and Evans 2003: 128).

Thus, like the geography sense, the measurement sense is directly related to the primary sense for it has the same semantic element of distance associated with scales of verticality. However, the meaning is different from the primary sense due to the change of domain, when the structure of physical space is mapped onto the structure of mental space. The combinability of ***below*** with distance words, e.g. *fifty per cent*, and other contextual cues, e.g. the verbs *lower*, *fall*, also strengthen the interpretation assigned to the preposition:

(227) *(…) dispute which always had the immediate effect of lowering that day's efficiency to **below** fifty per cent.*

(228) *English houses, with pitched roofs and fireplaces – in a temperature which rarely fell **below** thirty degrees (…)*

In the utterances of this type, G is some standard, norm or any other level on the negative value of the vertical line, serving as a division between two subspaces; hence a similarity with the primary sense of the preposition, when G's is also considered as a reference level. Like in case of ***žemiau***, the geometry of this entity also plays an important role. Even when G is zero, degrees, per cent, it designates a limit below which F is localized; hence a

linear type of conceptualization. In a number of instances, the position of F is taken by *temperature*, *per cent*, *degrees*, whereas *zero*, *freezing point*, *explosion point*, and the same *per cent*, *degrees* constitute G's prevailing denotata. Other fairly productive usage patterns in the BNC pertain to levels, limits, extents, thresholds, lines, and even height, weight, and other units of measurement:

(229) *(...) a near-bankrupt Great Britain trimmed her commitment back **below** the survival level (...)*

(230) *(...) a tube carrying that vital plasma into his arm, somewhere **below** the lower extent of his field of vision.*

(231) *Although he was a yearling and still **below** full weight.*

As shown by these examples, when the English ***below*** is used in the measurement sense, such abstract entities as sound, speed, weight, productivity, etc. usually function as F, but human beings are not excluded, either. However, what is of utmost importance is the positioning of such F with respect to the abstract G along the negative value of the vertical axis and an element of distance between the two entities in the domain of measurement.

3.3.4 Value sense

The final use type of the English ***below***, as attested by the BNC data, is manifest in the remaining 3.9% of the instances (see Table 8), reflecting the value sense of the preposition and, therefore, also pertains to the field of axiology (cf. the inferior sense in Tyler and Evans 2003: 129). Consider the following examples from the corpus:

(232) *The others have a rank which is **below** that of an officer but above that of an ordinary soldier.*

(233) *That was the only difference between him and the pilots and the mechanics **below** him.*

The interpretation of these utterances is not that F is located physically lower than G, but rather in an inferior position relative to it. The role of culturally based spatial orientations, including up and down, in forming emotional and other concepts has already been pointed out by Lakoff and Johnson (1980) and Kövecses (2010), who claim that although metaphor structuring our way of thinking is a conceptual phenomenon, we have access to it through the language we use. For instance, the examples above are linguistic expressions of the orientational metaphor LOW STATUS IS DOWN. Also, consider how the orientational metaphor BAD IS DOWN,

which is also characterized by a downward orientation, explains the usage of the English preposition in the following utterances:

(234) *(...) I live **below** the reach of the economy (...)*

(235) *'I'm sorry if I've been a bit **below** par this evening,' she apologised.*

In all of these sentences, the orientational metaphors tend to go with evaluation, which signals the relationship of this sense with measurement, for both entail reference to some standard (G); however, it has a emotional element in case of value. However, even in such metaphorical extensions, as attested by the examples below, the amount of space between F and G in the non-physical domain is emphasized either by the adverbs *way*, *well*, *a bit* or other units of measuring gradable distance (*two gins*, *two fathoms*, etc.), which may also prove the relations of value with the primary sense, e.g.:

(236) *(...) Mr Shakespeare was sometimes <u>way</u> **below** his best when it came to the writing of comedy.*

(237) *Dr. Stevie's playing <u>well</u> **below** his handicap (...)*

(238) *(...) a temperament born <u>two gins</u> **below** par.*

(239) *(...) the referee's insistence that he remove his bi-focals meant he was <u>two fathoms</u> **below** useless.*

The figurative meaning of such expressions has become so established, i.e. conventionalized, in the speech community, that its metaphorical force is no longer obvious for the language user.

3.3.5 Semantic network

Figure 17 summarizes all the four senses of the English ***below***, as attested by its usage types in the BNC, and shows their systematic relationships.

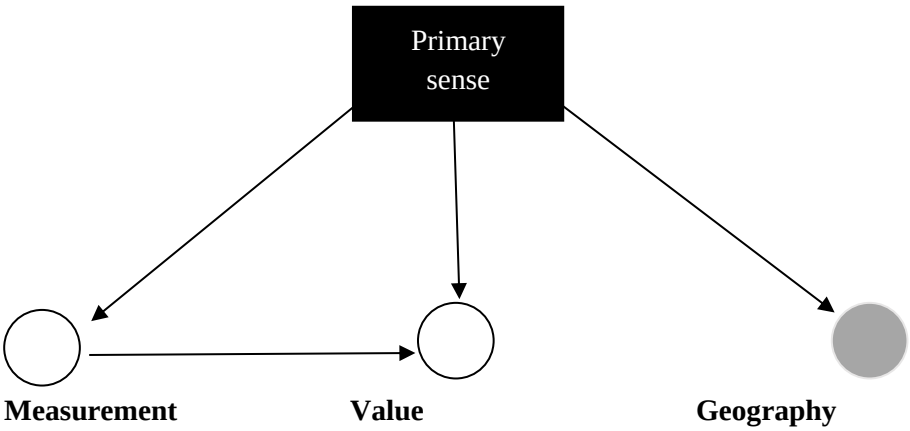


Figure 17. Semantic network of ***below***

The proto-scene, which refers to the primary sense of the preposition, gives rise to geographic descriptions, as determined by a change of domains, from concrete to more abstract, prompting map reading. Like in case of ***žemiau***, switching the axis, from vertical to horizontal, which would also allow a non-map type of extending space, is exluded from the semantic structure under analysis. The underlying reason for ruling out an element of horizontality is the arrangement of F below but not necessarily underneath G, which is characteristic of the primary sense and must be retained in geographical contexts as well. G in both senses refers to concrete objects, both animate and inanimate; however, abstract entities may not be excluded from the primary sense, either. Since preference is given to various natural and artificial physical features of an area rather than abstract entities in geographical contexts, the sphere is made grey in Figure 16 to illustrate the gradability of this sense (it is neither concrete, nor abstract, but definitely more concrete than abstract).

However, the remaining extensions from the primary sense of ***below*** definitely pertain to non-physical space. They seem to be determined by a change of domains, from concrete to that of measurement and value, which can be explained by the Conceptual Metaphor Theory (Lakoff and Johnson 1980) and the Theory of Mental Spaces (Fauconnier 1985, 2007). In both senses, G, which designates some level or standard, is abstract rather than concrete, and so is F although concrete objects, including human beings, are not excluded, either. However, since G entails not only gradable distance but also an evaluative element, measurement is also related to the sense of value.

Thus, all the senses of the English preposition are in fact directly and indirectly derived from the primary sense and have become part of its semantic network through routinization and entrenchment of meaning.

3.4 ***Under***

This section focuses on the senses of the English ***under*** as derived from the 1,000 instances out of 8,127 (including adverbs) in the BNC and their motivated interrelations rendering a semantic network. Consider Table 10 which displays the results of the semantic analysis:

Table 10. Senses of ***under*** (absolute and relative frequencies)

Senses	No of samples	Total	Grand total
1. Primary	199/19.9%	752/75.2%	1,000/100%
2. Cover	497/49.7%		
3. Personal space	56/5.6%		
4. Naming	26/2.6%	248/24.8%	
5. Less	12/1.2%		
6. Influence	198/19.8%		
7. Value	12/1.2%		

As shown in Table 10, the preposition manifests a total of seven senses: three – in the physical domain (senses 1-3), and four – in the non-physical domain (senses 4-7), which is in line with Langacker's (1987) observation that the more frequent a lexical item, the more semantically complex it becomes (cf. the low occurrence of ***below*** in the same corpus vs. the number of its senses in Table 8). As to the relationship between concrete vs. abstract senses of ***under*** (75.2% vs. 24.8%, see Total), it illustrates preference for extensions away from non-physical space in the semantic structure (cf. the opposite trend in the ratio of concrete to abstract senses of ***po***; for more ideas on the influence of the neighbouring or contrasting categories on the extension of a category, see Lakoff 1982: 17; cf. Taylor 1988: 309).

The semantic structure of ***under*** is discussed in the following way. First, the primary sense is established and its extensions associated with physical and non-physical space are examined. Next, semantically motivated relationships between the senses, or use types, differing in status are highlighted in the form of a network.

3.4.1 Defining the primary sense

3.4.1.1 Key components of the proto-scene

Figure 18 depicts the conceptual spatial relation between F and G, as coded linguistically by the English ***under*** and represented in the proto-scene by the diagrammatic configuration between the sphere (F) and the dark line (G).

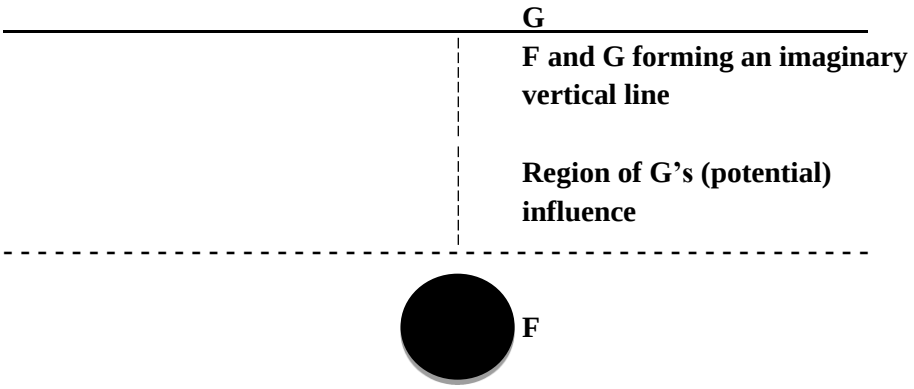


Figure 18. Proto-scene for spatial scenes with ***under***

The BNC data attest to several peculiarities of the proto-scene above. First, the schematic construal stipulates that F is located lower than and necessarily beneath G in Euclidean space along the negative value of the vertical axis, e.g.:

(240) *There's a space **under** the metal curtain.*

(241) *(…) the paper **under** the stumpy candle (…)*

In the examples, the lower edge of the curtain/candle, which is implicitly referred to by means of background world knowledge, becomes G (see the bold line in Figure 18). Whether this entity is porous or non-porous, a composite object or a continuous mass, is irrelevant for the proto-scene. The size and shape of G do not bear any significance either. A space/paper constitute F marking the boundary of vertical space, coinciding with its bottom at the lower end. In other words, the spatial arrangement of the entities presupposes the extension of space along the negative value of the vertical line. Moreover, as attested by the corpus data above, the conceptual spatial relation denoted by ***under***, when it is used in the primary sense, may imply contact between F and G (example (241)). On the other hand, the two entities may also be apart from each other (example (240)).

Dark rings under eyes illustrate different sections of a human face, as in the following utterance:

(242) *You've got terrible shadows **under** your eyes (…)*

The examples below also manifest a direct dependence relation between F and G, the position of which is taken by inanimate entities rather than human body parts: a belvedere and the pediment are closely related because of making up a building, while captions belong to some photos by providing descriptions for them:

(243) *(…) a small belvedere and a vertical sundial* ***under*** *its pediment.*

(244) *(…) some of the wording to go* ***under*** *the photos.*

An even larger complex made up of both entities is presupposed in the following examples, when the sun (the sky, the moon, planets, stars, etc.) functions as G for relatively minute objects beneath. Interestingly, utterance (246) illustrates that sometimes it is possible to merge not only physical but also non-physical space:

(245) *(…)* ***under*** *the hot sun, the mouse crouched (…)*

(246) *I was born* ***under*** *an unlucky star, mister.*

Thus, while contact is a factor of less importance, an inherent feature of negative verticality in addition to the absence of functional interaction between the entities, which is due to the viewer's background knowledge and construal of the situation, constitute the major components of the proto-scene involving the conceptual relation denoted by the English ***under***. Moreover, viewing the spatial scene may entail both intrinsic and relative frames of reference without any semantic consequences. In the current investigation, this proto-scene will be referred to as the typical, most representative, or primary sense of ***under***. However, the diachronic criterion, which Tyler and Evans (2003: 123) highlight as one of the most important for primary sense identification, by relating ***under*** to Sanskrit *adhara* 'lower', its etymologically earlier concrete sense, does not seem to play a major role in the present semantic analysis. Rather, on the basis of the BNC data, the typicality of this sense is attested by two criteria: (1) the physical aspect and (2) the least elaborate content in comparison with the other concrete senses of the preposition. Both of them will be discussed in more detail below.

3.4.1.2 Types of F and G

As far as the frequency of the English ***under*** in the primary sense is concerned, it is illustrated in Table 10 (19.9% of the instances; cf. cover – 49.7%, personal space – 5.6%). Now consider Table 11 displaying types of F and G when the preposition appears in this sense.

Table 11. Types of F and G in the primary sense of ***under*** (absolute and relative frequencies)

G / F	Human body	Concrete object	Total 2
Human body	19/9.6%	50/25.1%	69/34.7%
Concrete object	37/18.6%	67/33.7%	104/52.3%
Abstract entity	4/2%	13/6.5%	17/8.5%
Action/process	5/2.5%	4/2%	9/4.5%
Total 1	65/32.7%	134/67.3%	199/100%

As seen from Table 11 above, the physical aspect of the primary sense of ***under*** is basically rendered by the arrangement of F and G in the domain of the concrete. Moreover, the nature of the two entities also plays a major role. In the majority of the usage cases in the corpus, G designates a concrete object, whereas in the remaining instances, it refers to human morphology (67.3% and 32.7%, respectively, see Total 1; cf. ***below***). Abstract objects and actions/processes have not been encountered in the position of G in the BNC data, so they are included in Table 11. However, the physical aspect of the primary sense of the preposition is manifested not only when concrete objects, including the human body, take the position of G, but also due to the nature of F. As regards this entity, it displays similar tendencies. In other words, concrete objects as F's denotata account for the largest number of instances, while human morphology takes the second place (52.3% and 34.7%, respectively, see Total 2). Actions/processes and abstract entities, whose location is determined with reference to concrete objects or human morphology, are encountered in the smallest number of instances with ***under*** in the primary sense (4.5% and 8.5%, respectively, see Total 2).

As regards a concrete object as the most frequent type of G, it may combine with various objects. First of all, the location of other concrete entities is determined in this way, which accounts for the largest number of instances (33.7%, see Table 11). Consider the following examples illustrating man-made objects, such as doors, radiators, powers lines, in the position of G for a wide range of other man-made entities, for instance, from a chair-leg, medical instruments to even buildings:

(247) *(…) a broken chair-leg **under** the door to keep the monster out.*

(248) *Isn't that a pair of Spencer Wells **under** the radiator?*

Human morphology, taking the second place in terms of the frequency of occurrence as G (25.1% of the instances, see Table 11), is illustrated by the utterance illustrating a professional context:

(249) *A gentleman tilts his head **under** Jim's clippers.*

Such large entities as the sky, stars, planets in the position of G, when combined with concrete objects or human morphology featuring as F, constitute quite a number of instances with ***under*** in the primary sense in the BNC:

(250) *(...) she had lain naked and adoring **under** the moon (...)*

(251) *(...) a big dipper with no brakes flying out across a midnight ocean **under** a chandelier of stars.*

Interestingly, concrete entities in the position of G can also take F denoting abstract objects or actions/processes, but such cases are in the minority (6.5% and 2% of the instances, respectively, see Table 11). However, neither abstract objects (example (252)) nor entities with a dynamic element (example (253)) affect the interpretation of the prepositional meaning. In other words, what remains important is F's location beneath G, both entities forming an imaginary vertical line, e.g.:

(252) *(...) a new life seething **under** its flushed silver scales.*

(253) *The sorrow of the sky was dissolving; **under** it the relentless heaving of the compassionless waters mocked the sky's concern.*

In addition to the utterances with ***under*** in the primary sense, when concrete objects are employed as G, there are samples with various human body parts, e.g. ears, lips, shoulders, cheeks, hair, etc., featuring as reference entities. However, eyes and eyebrows seem to constitute the most typical examples of such an object in the proto-scene. The position of F is taken by other human body parts, such as lips, arms, etc. (9.6% of the instances, see Table 11):

(254) *(...) she pressed close to him, her lips parting **under** his.*

However, human body parts as F sometimes cannot be segregated from the body, in other words, require G of which they constitute as an integral part, as in the following utterances:

(255) *I have a blister **under** my right ear (...)*

(256) *There were crescents **under** his eyes like bruises (...)*

The amply used *feet* is also among G's denotata in the primary sense of the preposition, which usually requires such natural entities as grass, sand, pebbles, the ground, hearth, bushes, or man-made objects, for instance, a rug, linoleum, as in the following instances in the corpus (18.6% in addition to other inanimate entities among F's denotata, see Table 11):

(257) *You're whipping the rug from **under** our feet (...)*

Abstract entities and actions/processes should also be taken into consideration so as to give a broader picture of the primary sense of ***under*** when combined with people or human body parts as G (2% and 2.5%, respectively, see Table 11), e.g.:

(258) *(…) the pressure **under** his collarbone was intense.*

(259) *(…) he never smiled, but glowered defensively at the world from **under** his eyebrows (…)*

Thus, in the light of the major components of the proto-scene involving the conceptual relationship designated by the English ***under***, the same successive arrangement of F and G is retained in all the examples illustrating various types of these entities. The typicality of the primary sense is attested by the preference for the physical type of F and G, either a concrete object or the human body, as well as the least elaborate content in comparison with the other concrete senses. Further in the analysis, it will be shown how less typical senses are continuously related to the primary sense by exploiting and transforming it in different ways, i.e. the underlying principle of motivated polysemy will be taken into consideration.

3.4.2 Cover sense

The cover sense of ***under***, as used in as many as 49.7% of the BNC instances (see Table 10), is the most frequent when the preposition segments physical space (cf. primary sense – 19.9%, personal space – 5.6%). Its schematic representation is the same as that for the cover sense of the Lithuanian ***po***. However, some new elements are present in the semantic structure under study, as compared to the primary sense of the English preposition, so it will be discussed further.

3.4.2.1 Key elements

It seems important for the cover sense of ***under*** that the entities should preserve the spatial configuration of the primary sense, i.e. F is located lower than G in Euclidean space on the negative value of the vertical axis, e.g.:

(260) *He turned over, pushing his head **under** his pillow.*

(261) ***Under** his bed was rolled a piece of carpet (…)*

In the BNC examples, it is the lower part of the pillow and the bed that is implicitly referred to by means of background world knowledge and becomes G. The head and a carpet, acting as Fs, are situated straight beneath it and designate the boundaries of vertical space, coinciding with its bottom

at the lower end. In other words, the spatial arrangement of the two entities presupposes the extension of space along the negative value of the vertical line in the direction of F and reaching its lower boundary.

Furthermore, like in the primary sense, contact between the entities or the absence of it is the consequence of the context, so it does not play a major role in the spatial scene under investigation. Consider, for instance, the physical configuration of the person's head and the pillow which presupposes contiguity (example (260)). On the other hand, a carpet under somebody's bed does not imply contact (example (261)).

However, the most important element in the present semantic structure is functional (Vandeloise 1991, 1994) or the so-called extra-geometric (Coventry *et al.* 2001) interaction between the entities in spatial alignment along the negative value of the vertical axis (cf. *proximity* in Lindkvist 1976, Cienki 1989, Dirven 1993, Maljar and Seliverstova 1998, Šukys 1998, Valiulytė 1998; see also *qualitative region* in Šeškauskienė 2003, 2007). In other words, G is capable of potentially covering F situated lower than it, which is either explicit or inferred from the overall interpretation of the situation. When ***below*** and ***under*** are employed interchangeably, they evoke different construals of the same spatial scene, and it is the language user who selects one of them during the process of communication, cf.:

(262) *Salt water is pumped up from deep **below** the ground.*

(263) *(...) coal reserves still **under** the ground (...)*

So, while ***below*** reflects the spatial configuration of the two discontinuous objects, or the so-called objective truth, when one portion is conceptualized as being lower with respect to the other on the negative value of the vertical axis, the usage of ***under*** implies functional consequences, either obvious, as sometimes indicated by the context, or implicit, as construed by the viewer. Also consider the difference of functional interaction when the preposition under study is used in two seemingly close, but in fact distinct senses, attesting to disparate states of affairs as construed by the language user, e.g.:

(264) *(...) a frost crackled **under** their feet (...)*

(265) *Her legs stiffened **under** the blanket.*

In example (264), the viewer conceptualizes the succession of the entities along the vertical line, so ***under*** manifests the primary sense. Example (265), on the other hand, implies covering for somebody's legs underneath the blanket not only from above, but also sideways. More utterances illustrating total covering for F or part of it are provided below:

(266) *Giant crabs, **under** flat skulls, staring inland (...)*

(267) *You sense the sulphur **under** the earth's crust.*

The change in the way that G affects F is determined by different parameters of G, namely, it is currently prerequisite for this object to be conceptualized as a two-dimensional surface (e.g. a bone framework, the hardened layer of the earth). Moreover, G must be larger than or at least of the same size as F in order to be able to cover it. Last but not least, in terms of the spatial alignment of the two entities along the negative value of the vertical axis, G as a two-dimensional surface cannot be perpendicular to F, but rather parallel to it so as to be able to protect or conceal it, cf.:

(268) *(…) he stood (…)* ***under*** *a long picture of red fish (…)*

(269) *(…) the soft stems crushing* ***under*** *their feet.*

Example (268) illustrates the primary sense of ***under***, because the man and the picture form a vertical line. Example (269), on the other hand, manifests the cover sense of the preposition since the position of the bottommost part of the shoe as a two-dimensional surface enables it to cover soft stems acting as F, whether viewed from above or sideways. Contextual clues, for instance, the verbs *lurk*, *hide*, *bury*, *secret*, *tuck away*, *dive*, *submerge*, etc., frequently indicate that the covering hypothesis is correct:

(270) *(…) he bought another packet of condoms and secreted them* ***under*** *the lining paper of his sock drawer.*

(271) *It was her nail scissors that she'd been searching for days, lost* ***under*** *the hearthrug and pressing into her hip.*

Nouns, e.g. *cover*, also appear with ***under*** in this sense:

(272) *The fur coat was hanging* ***under*** *a cotton cover.*

In addition to covering F or part of it completely from sight as a distinct element in the semantic structure of the English preposition, there is another type of covering as a functional outcome due to the characteristics of F and G in spatial arrangement, e.g.:

(273) *Ari sang, kicking him* ***under*** *the table.*

As shown by the example above, G (the table) lends itself to covering only if you look at F (a person) from above, but not from another vantage-point, e.g. sideways. This type of functional interaction will be called partial covering, and constitutes almost half of the instances of the present sense of ***under***. The verb *hide* acts as a contextual clue, indicating that the hypothesis of covering is correct:

(274) *(…) taking Robinson Crusoe by way of example – to hide from it* ***under*** *a parasol in order to conserve that fairness of skin threatened by the desert island (…)*

Thus, while contact remains a semantic element of less importance, an inherent feature of negative verticality and a shift in the size and dimensions of G with respect to F consequently presuppose functional interaction

between the entities, i.e. from the least elaborate to more concrete and complex, constituting the key elements of the cover sense of the English ***under***, established as an extension from the primary sense. Moreover, covering manifests in two different ways: total, when the entire F or its part is covered from the top and sideways, and partial, which involves cover only from above. Also, the spatial scenes entail both intrinsic and relative frames of reference without any semantic consequences. On the basis of the data, this sense will be further discussed in terms of two closely interrelated criteria: (1) the physical aspect and (2) the frequency of instantiation in the corpus.

3.4.2.2 Types of F and G

In the cover sense, pertaining to both total and partial cover, the English ***under*** exhibits several types of F and G, whose frequency of instantiation in the BNC is shown in Table 12.

Table 12. Types of F and G in the cover sense of ***under*** (absolute and relative frequencies)

G / F	Human body	Concrete object	Abstract entity	Total 2
Human body	27/ 5.4%	152/ 30.6%	8/ 1.6%	187/ 37.6%
Concrete object	27/ 5.4%	208/ 41.9%	12/ 2.4%	247/ 49.7%
Abstract entity	8/ 1.6%	10/ 2%	12/ 2.4%	30/ 6%
Action/ process	8/ 1.6%	22/ 4.4%	3/ 0.6%	33/ 6.6%
Total 1	70/ 14%	392/ 78.9%	35/ 7.1%	497/ 100%

As seen from Table 12, the physical aspect of the cover sense of the preposition is mainly determined by the nature of G. In other words, in the majority of the instances, G is concrete, while in the remaining examples, it is either a person or human body parts or even an abstract object that is selected (78.9%, 14%, and 7%, respectively, see Total 1). Since actions/processes do not participate as G in the spatial scenes under study, they are not included in Table 12.

As to F in the cover sense of ***under***, it manifests rather similar tendencies. The human body statistically performs worse than concrete objects (37.6% and 49.7%, respectively, see Total 2 in Table 12). Abstract entities, on the other hand, take the position of F in almost as many instances as actions/processes, but both are in the significant minority, as compared with human morphology and concrete objects (6% and 6.6%, respectively, see Total 2 in Table 12). However, neither abstract entities nor objects with a dynamic element affect the interpretation of the cover sense. In other words, the comprehension of the conceptual spatial relation denoted by the preposition is not constrained by the characteristics of F. What remains relevant is the spatio-geometric content, i.e. negative verticality, and, even more importantly, functional engagement between the two entities. Their examples, when ***under*** is employed in the cover sense, will be discussed further in more detail.

When G is a person or human body parts, it usually entails such denotata as fingernails, eyelids, fists, the tongue, the chin, the skin, hair, feet, or muscles, which is well illustrated by the BNC data:

(275) *(...) this flaming green-eyed redhead has got **under** your skin, she's growing with you darling (...)*

(276) *(...) he had (...) dirt **under** his fingernails (...)*

(277) *The old Grenfell charm must have been working even **under** all that hair not to mention the scruffy beard.*

(278) *Doone looked at me from **under** his eyelids.*

The examples above also illustrate major types of F when human morphology functions as G. First of all, the location of other body parts, e.g. lungs, eyes, hands, the heart, the face, the forehead, ears, blood, etc. (5.4% of the instances, see Table 12) is determined in this way. A wide range of inanimate objects acting as F, all varying in size, shape, and dimensions, e.g. a chocolate, a telephone, dirt, plant stems, and even the mountains, also constitute the same percentage in the corpus. As regards abstract entities or actions/processes, they do not tend to combine with people or human body parts as G (1.6% of the instances for each type, see Table 12). Consider *strain*, *politeness*, *factors*, *words*, etc., all illustrating abstract entities, and *seethe*, *think*, *sweep*, *look*, *watch*, etc., denoting actions/processes in the corpus data.

On the other hand, the physical aspect of the cover sense of ***under*** is manifested when not only the human body, but also other concrete objects are employed in the position of G. Consider various types of artefacts, for instance, garments, such as shawls, trousers, shirts, blouses, skirts, dresses, sweaters, aprons, etc. However, caps, hats, coats, anoraks, raincoats are the

most frequent among them, but such preference is not surprising, because these clothes are associated with providing a cover from rain, snow, the sun, or the wind, e.g.:

(279) *She had hidden it [the wallet]* ***under*** *her hat (…)*

(280) *(…) her armpits felt clammy* ***under*** *her raincoat (…)*

Less frequent Gs, which require only human morphology in the position of F, subsume such denotata as wigs and even make-up as a type of garment in an attempt to conceal specific areas on one's head or face, e.g.:

(281) *(…) his forehead red* ***under*** *his wig.*

(282) *Her face had become blotchy* ***under*** *her make-up (…)*

A variety of small articles in households, for instance, bandages and towels, can also take the position of G by being able to potentially cover various inanimate objects and, most importantly, human body parts. Also note how the vertical axis is backgrounded, as in the examples illustrating the cover sense of the Lithuanian ***po***, e.g.:

(283) *(…) a beach towel making freakish shapes as the woman* ***under*** *it changed.*

(284) *There is blood* ***under*** *that bandage – no – I won't hurt.*

In addition to garments, other miscellaneous human-made objects, for instance, a variety of bedclothes, such as blankets, sheets, pillows, cushions, duvets, mattresses, in the position of G may frequently lend themselves to cover conceptualization with ***under***. Human body parts and other concrete objects usually act as F, which is well illustrated by the following BNC examples:

(285) *She surfaced from* ***under*** *the sheets (…)*

(286) *The woman (…) slid the Kalashnikov* ***under*** *a cushion.*

Other entities employed as G in the cover sense refer to such man-made objects as carpets, rugs, lids, removable or hinged covers for containers. They typically require concrete objects in the position of F, but abstract entities are not ruled out, either:

(287) *(…) they [scissors] were* ***under*** *the rug – (…)*

(288) *(…) sweep the quarrel* ***under*** *the carpet.*

Finally, lexemes referring to large constructions, such as parts of houses or ships, constitute another group of G's denotata, e.g.:

(289) *Some soul had concealed a bomb* ***under*** *the flight deck.*

In addition to artefacts, from relatively small to larger entities, some phenomena of the physical world, such as features and products of the earth, for instance, ice, crusts, boulders, as well as lawns, meadows, and even plants, blossoms or roots forming a layer capable of covering, may illustrate

G in combination with ***under*** in this sense. Both animate and inanimate objects take the position of F, e.g.:

(290) *(…) giant goldfish floated **under** them [water lillies]*.

(291) *(...) beaten earth **under** the thickness of the heather.*

Interestingly, the BNC attests to G capable of potentially covering not only as a concrete solid object, but also as a composite entity made up of several parts. However, the change of G's constitution does not affect the meaning of the preposition under study, e.g.:

(292) *The ground, **under** its layer of pine needles (…)*

(293) *Or perhaps it belonged to a child who was **under** rubble.*

If all the denotata of G capable of covering have been solid objects so far, illustrating a non-porous type of space, there are also BNC utterances manifesting a porous type of bounded space typically extended along the negative value of the vertical axis. Consider the following entities: dirt, sand, snow, mulch, or different types of water, such as ocean, sea, and river, only the surface of which is metonymically highlighted. Such G can submerge F, which usually refers to human morphology or various inanimate objects, although actions/processes and abstract entities are also allowed:

(294) *(…) seeds had baked then frozen **under** snow (…)*

(295) *(…) oddness is acceptable only **under** the sea, for the lop-sided lobster, the wonky oyster (…)*

In all the examples cited so far, a distinct element in the cover sense of ***under*** is hiding F or its part completely from sight. Therefore, G is conceptualized as larger and encompassing F, which is smaller or at least the same size. Moreover, all the denotata of F and G may be porous or non-porous (solid) objects, referring both to animate or inanimate entities. However, as noted in the discussion of the key elements of the cover sense, the usage of the English preposition is also appropriate when G partially covers F by extending over it only from above, but not sideways. The utterances manifesting the types of F and G will be discussed further.

Human morphology, for instance, eyelashes, armpits, moustache, feature as G in the BNC examples with ***under*** in partial cover. Human body parts, such as the mouth, teeth, lips, eyes, a wide range of concrete objects, e.g. sticks, boxes, guns, newspapers, and especially various types of bundles, bags, which are among the most prevailing, as well as actions/processes may take the position of F, e.g.:

(296) *(…) the man with the microphone asked, thrusting it **under** Clasper's chin (…)*

(297) *Angharad looked at her from **under** thick lashes.*

As shown by the corpus data, when arms, armpits and the chin function as G, the notion of control does not imply a long-term control or control extending over a larger area. Rather, it is temporary and applied only locally in contexts with humans. As regards eyelashes in the position of G, they typically entail actions by the eyes (e.g. *look*) when combined with ***under*** in this sense.

In addition to human morphology, there can also be distinguished man-made entities capable of partially covering F. First, various pieces of furniture constitute a prolific group among the instances under examination. For instance, consider benches, chairs, sofas, and especially beds and tables which are amply used in the position of G. Human body parts, concrete objects and actions act as F, as attested by the following BNC examples:

(298) *He sweeps **under** the bench I'm sitting on (…)*

(299) *Tony gets **under** the bed when he sees him coming.*

(300) *Dot shoved the trug out of sight **under** their table (…)*

Among other Gs, there are parts of buildings, especially concaved surfaces; hence their combinability with foundations, roofs, domes, eaves, rafters, arcs, and porchs, all capable of giving a covered shelter from above. Other man-made structures typically found inside a building, for instance, stairs, also appear in the position of G with this type of functional outcome. In addition, large constructions, such as bridges, flyovers, roads, highways, feature as landmarks providing partial cover, too. Humans and animate or inanimate entities function as F in such cases in the BNC corpus, e.g.:

(301) *A big, flat coal barge was passing **under** the bridge (…)*

(302) *(…) people who are sleeping (…) **under** railway arches.*

In addition to a wide range of pieces of furniture, parts of buildings and even larger constructions, as exemplified above, there is a variety of other objects, typically used outside, for instance, canopies, canvases, parasols, and umbrellas, employed with the English preposition to denote cover from the sun or rain, e.g.:

(303) ***Under** the nightshade of a parasol, light lacquered mauve and gold (…)*

Besides artefacts, some entities of the physical world, such as various plants, e.g. bushes or the amply used trees, may partially hide F or provide shelter and protection for it. Interestingly, people, usually sleeping, siting, standing, waiting, lying, hiding, as well as other animate or inanimate objects, abstract entities and even actions/processes are not conceptualized to be situated or taking place under the roots of these woody plants, but rather under their constituent parts, branches and leaves (see the principle of *tolerance* in Herskovits 1988: 273), which form a two-dimensional cover:

(304) *(...) they were forced to shelter from a shower **under** the (...) sycamores (...)*

(305) *(...) she went and closed the gate **under** the big yew tree.*

(306) *(...) the untouchable part of us, the shadow of still life **under** an apple tree (...)*

(307) *That is what is going on there, **under** the scrubby oak tree, hour after hour (...)*

On the other hand, the cover sense of ***under*** is manifested not only when the human body or other concrete entities are involved, but also when abstract entities are employed as G. Their denotata include character features, arguments, states, emotions, feelings, etc. However, even when G does not have a physical or concrete existence, F may refer to a variety of objects: human beings, concrete entities, abstract objects and actions/processes (1.6%, 2.4%, 2.4%, and 0.6% of the instances, respectively, see Table 12), as in the following examples:

(308) *I stayed on **under** the welding cold (…)*

(309) *(…) the sea sparkled **under** a shimmering haze of heat.*

(310) *The question that had lurked **under** the surface of the whole conversation (…)*

(311) *(…) while the lights were out, they had the chance to change places **under** cover of darkness (…)*

Thus, in the present concrete sense, pertaining to both total and partial cover, the English ***under*** manifests several types of F and G. Porous (e.g. water, sand, snow) and non-porous entities (e.g. garments, bedclothes, furniture, large constructions, such as parts of buildings, bridges, flyovers, etc., as well as features and products of the earth, including various plants) constitute the most frequent type of G, while people and human morphology take the second place. Abstract entities employed as G appear in an even smaller number of instances. As regards Fs in the cover sense of the preposition, they manifest similar tendencies: people and their body parts are used less frequently than other concrete objects. Abstract entities also take the function of F in a small number of the utterances, and so do actions/processes. In order to be able to provide a covered shelter, G must be typically situated above it, and most importantly, larger than it or at least of the same size. Moreover, G must lend itself to being conceptualized as a two-dimensional surface aligned in a parallel rather than perpendicular manner with respect to F (cf. the primary sense of ***under***).

3.4.3 Personal space

Personal space, which is the final concrete sense of the English ***under***, is found in 5.6% of the instances in the BNC (see Table 10), illustrating not only the key semantic elements which remain the same but also distinct differences from the primary sense. Figure 19 offers the schematic representation of the spatial configuration between the sphere (F) and the dark line (G), whose region of potential influence is marked by the punctured line.

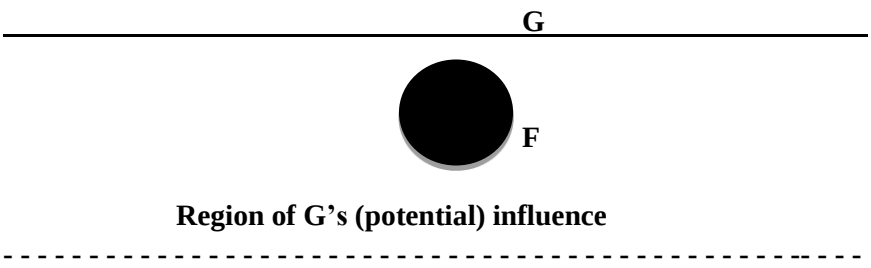


Figure 19. Spatial scene in the personal space sense of ***under***

As shown by the diagrammatic arrangement of the entities, F is situated with respect to G as a geometric reference, i.e. the position of 'zero', on the negative value of the vertical axis and designates the boundary of vertical space. Thus, the spatial configuration is the same as that for the primary sense. However, this type of construal does not imply that F is literally under G, because verticality becomes backgrounded due to the foregrounding of another semantic element, namely, proximity. In other words, the entities are situated in a relatively short distance away from each other in extra-linguistic reality. Consequently, proximity implies that G can still affect F, in this case, enabling the possibility for a person to see or reach it fast. Therefore, human limbs typically appear in the position of G in this sense of ***under***, while people, abstract entities and actions/processes are the most prevailing types of F, as in the following BNC examples:

(312) *(...) her three-year-old daughter who had convulsions and died **under** her hands on the kitchen table.*

(313) *(...) the work might take shape **under** our hands (...)*

(314) *I think you want that, living **under** their feet, and their scolding and groaning.*

Interstingly, unlike the Lithuanian ***po***, a variety of small concrete objects which can be manipulated with after a person extends his arm (e.g. touching, seizing, lifting, throwing, packing, etc.) are not found among F's denotata in

combination with hands in the English corpus. As regards F combined with feet as G, it refers to a very narrow range of entities, i.e. various types of action, e.g. *living*, *scolding*, or *groaning*, as in the example above. The tendency for some expressions to become fixed phrases, for instance, 'spit **under** one's feet', is also observed in the BNC data. However, the less common ***under*** with hands acting as G can be replaced with the more frequently employed prepositions – ***in*** and ***at***, both used in the idiomatic expressions implying the responsibility and care of somebody near you. In Lithuanian, the same spatial scene would be rendered by the usage of ***ant*** '**on**', implying the upper part of the vertical axis, and the noun in the Genitive case (e.g. *mirti* ***ant*** *jos rankų* die-INF **ant** 3-GEN.SG.F hand-GEN.PL 'die **in**/**at**/**under** her hands').

Sensory accessibility in the personal space sense of the English preposition can be derived when not only human limbs but also noses appear in the position of G, e.g.:

(315) *Erika found herself **under** the nose of the Minister, who beamed upon her (...)*

(316) *(...) she asked, waving the envelope **under** his nose.*

(317) *And concentrate instead on the infinity **under** our very noses.*

(318) *If I'd known what was going on in that house right **under** my nose.*

As attested by the BNC data, this type of G is more frequent and combines with a wider range of F, from people and inanimate objects to abstract entities and actions/processes. Moreover, the usage of contextual clues, such as *right* and *very*, as underlined in some of the examples above, corroborates the hypothesis of a short distance between the entities in the spatial configuration under study.

In addition to human morphology functioning as G in the personal space sense of ***under***, some parts of buildings, for instance, windows, may also take its place:

(319) *(...) families going in to the last service and then passing **under** his window carrying sprays of olive leaves.*

(320) *(...) coral stems rising from the rosebush **under** my window.*

(321) *Just outside the door, **under** the window, was a yellow painted bench on which the old woman sat (...)*

As shown by the BNC utterances above, the position of F may be taken by people; however, inanimate objects are the most frequent, for instance, plants, flower-beds, or some furniture, such as benches, which is typically used outside. The usage of the adverb *just*, testifies to the semantic element

of spatial closeness in combination with windows as G in the prepositional sense under analysis, e.g.:

(322) *(…) a seat, <u>just</u> **under** a tiny, open, oval-shaped window which looked over the green.*

Another instance of the personal space sense is attested in the following utterances from the BNC data, because neither the terrace nor the cemetery are literally beneath the house or the factory in the position of G:

(323) *We can (…) [g]ather on the terrace **under** the house.*

(324) *(…) the new industrial cemetery crowded **under** a factory between two motorways (…)*

The final group of examples pertains to high objects, for instance, crosses, statues, monuments, street lamps or other human-made constructions, which can be found in the position of G in the semantic structure under study. Consider the following instances with people or animate/inanimate concrete entities acting as F:

(325) *We (…) waited **under** a statue of George the Third (…)*

(326) *(…) a stone cross, **under** which lay a brown dog (…)*

The usage of street lamps as the denotata of G may require more discussion. On the one hand, the field of light and/or heat that the object radiates may be conceptualized as encompassing the entities below it and, therefore, providing a potential cover for them. However, the hypothesis of covering may be refuted by negative evidence, testifying the inappropriateness of the verb *hide* as a contextual clue, which is feasible in cases pertaining to the cover sense of ***under***, cf.: *I <u>hid</u> **under** a blanket/a table*, etc. vs. * *I <u>hid</u> **under** a lamp-post*.

Furthermore, the usage of the tall-construction type of G may look similar to some instances manifesting the primary sense of the preposition, cf.:

(327) *A woman is sitting **under** a picture*.

(328) *(…) Jay's Hollywood imagination was building her beds of rose-petals **under** crystal minarets.*

Example (327) illustrates the primary sense of ***under*** since its usage emphasizes the entities successively arranged along the negative value of the vertical axis. Example (328), on the other hand, attests to the personal space sense of the preposition, because it is not only potential interaction between the objects, but also a different type of G, upright and usually erected on the solid surface of the earth or standing on some pedestal, that is highlighted here. Thus, if F (a woman) can be conceptualized as sitting literally under the lower part of a picture as G, it is impossible to construe this kind of

image in the second case, for beds of rose-petals are only near, but not under the minarets.

Thus, in all the cases illustrating the personal space sense of the English ***under***, a feature of negative verticality derived in the primary sense of the preposition is backgrounded. What becomes foregrounded is the arrangement of the two entities in a short distance along the negative value of the vertical axis in Euclidean space, which still allows G to potentially interact with F (Vandeloise 1991, 1994; Coventry *et al.* 2001; cf. *proximity* in Lindkvist 1976, Cienki 1989, Dirven 1993, Maljar and Seliverstova 1998, Šukys 1998, Valiulytė 1998; see also *qualitative region* in Šeškauskienė 2003, 2007). As attested by the corpus data, a person can take care of or be responsible for some object (hands, feet, noses as G), or see what is located nearby outside (high constructions as reference entities).

3.4.4 Naming sense

In addition to more concrete senses, namely, the primary sense, cover, and personal space in the physical domain, the English ***under*** has also developed a number of abstract senses in the non-physical domain. As shown in Table 10, 2.6% of the instances in the BNC attest to the naming sense of the preposition, the underlying element of which is specifying somebody or something by giving the words that they are or supposed to be known by. Therefore, names, soubriquets, aliases, nicknames, headings, headlines, titles, initials, signs, etc. usually appear among the denotata of G. As shown by the utterances below, people constitute one of the most typical Fs in the present semantic structure; however, concrete objects cannot be ruled out either. Although rather scarce, neither do abstract entities make any exception in the naming sense of ***under***. Actions that would be indicated by means of this type of G, however, have not been observed in the data, e.g.:

(329) *Do you know Tammuz Malamute **under** any other name?*

(330) *(...) to divert large amounts of money into a fund **under** the name of another firm, a non-existent firm I imagine.*

(331) *(...) the symptoms are diagnosed in those terms, and the Materia Medica places them **under** those headings: location, sensation etc.*

On the other hand, no matter what kind of entity functions as F, in all the cases cited so far, an inherent feature of negative verticality, which was relevant for the primary sense of the preposition, has become backgrounded, as in case of personal space or cover in some cases. This might be because G is rather abstract, notwithstanding the instances when it might achieve a

more concrete shape by being written down. However, since names, headlines, etc. bear a very close relationship with the objects or phenomena that they describe, either animate or inanimate, concrete or more abstract, an element of potential interaction between the entities is highlighted. Interestingly, this type of arrangement of information is not reflected in the Lithuanian language, which has a shorter written tradition. Thus, it is a shift in the type of G, which has become abstract, that consequently presupposes a change in the type of functional interaction between the entities, i.e. from concrete and complex, e.g. cover, to more abstract, i.e. naming. On the basis of these elements of the naming sense of the English ***under***, it can be established as a direct extension from the primary sense of the preposition

3.4.5 Less sense

Another usage type of the English ***under*** illustrating segmentation of non-physical space, as derived from the BNC data, pertains to the less sense, the instantiation frequency of which is rather low (1.2%, see Table 10), e.g.:

(332) *(...) Community Homes (...) for everyone* ***under*** *sixteen.*

(333) *(...) 1200 in a post-office account, and a little* ***under*** *4000 in the Leeds Permanent Building Society.*

(334) *(...) this telegram could not be relayed south in* ***under*** *twenty-four hours (...)*

(335) *As she was just* ***under*** *six foot tall and very slim (...)*

In these sentences, various types of quantities, for instance, age, money, time, height, etc. are referred to as G. People and concrete objects (e.g. money, a telegram) typically appear in the position of F. However, we do not conventionally understand that there is a spatial relation that holds between the age younger than 16, or an amount of money and time less than 4000 and 24 hours, respectively, and finally, being shorter than 6 feet. Rather, in all of these cases, ***under*** has a conventional meaning of "less than" due to a motivated experiential correlation between vertical elevation and quantity (see the orientational metaphor LESS IS DOWN in Lakoff and Johnson 1980 and Kövecses 2010). Being lower correspondingly implies having less of something. The semantic structure, therefore, seems to be directly derived from the primary sense of the preposition under study. The schematic configuration of the two entities in non-physical space is the same as that for the primary sense characterized by an element of negative verticality.

3.4.6 Value sense

Another usage type of the English ***under*** in the abstract domain also pertains to the field of axiology. It is the value sense which has been found in the BNC corpus in the same number of instances as the less sense discussed earlier (1.2%, see Table 10). Consider the following examples manifesting two idiomatic expressions:

(336) *'What a shame,' Otley muttered **under** his breath.'*

(337) *Marie's pretty **under** the weather (…)*

If something is spoken ***under*** *your breath*, it is spoken in such a soft, quiet voice that others cannot hear it distinctly. In other words, you do not use your full breath to give resonance to vowels and emphasize consonants. You use only a little breath, perhaps whispering, which is away from the usual way of speaking (G). The linguistic expression is an example of the metaphor LOW QUALITY IS DOWN, which is characterized by a downward orientation. On the other hand, if somebody feels ***under*** *the weather*, they feel ill or exhausted. The etymological history of the expression is rather interesting. When ships were powered by sail, the captain's log documented everything that happened during the day. Since sickness could spread rapidly in a vessel, the number of sailors that were ill frequently exceeded the space provided in the log to record their names. During these times, the excess names of the sick were written down in the next column, which was reserved for the weather conditions of the day. Thus, it was usual for an ill sailor to be listed ***under*** *the weather*. So, even though the expression might be closely related to the naming sense, it is also illustrative of the value sense, because of the evaluative function of the orientational metaphor BAD IS DOWN, which plays a role in forming emotional and other concepts (Lakoff and Johnson 1980 and Kövecses 2010). Since the schematic configuration of the two entities is the same as that for the primary sense but an element of negative verticality pertains to non-physical space, the value sense seems to be derived from the primary sense of the preposition under study. However, the present semantic structure is also related to the less sense, for both entail reference to some standard (G); however, it has a emotional element in case of value.

3.4.7 Influence sense

Last but not least, like the senses of naming, less and value, the influence sense of the English ***under*** also refers to segmentation of non-physical space. It occurs in 19.8% of the instances in the BNC (see Table 10), which

makes it the most frequent abstract meaning of the preposition. Consider the following examples which illustrate control as one of the most fundamental encounters that a person, a concrete object or abstract entities may undergo:

(338) *Surkov and Rozanov increasingly became characters **under** my control (…)*

(339) *I found the staircase and slid silently down the banisters **under** the disapproving eye of Sir Mauger Grindlewood.*

(340) *(…) **under** the influence of my friends' euphoria, I cheered up.*

The sentences above do not have a conventional interpretation that some people are physically lower than me, Sir Mauger Grindlewood or my friends, but rather that their actions are scrutinized by me, Sir Mauger Grindlewood or affected by the friends' feeling of excitement. Therefore, eyes and actions involving these organs of sight, such as gaze, supervision, observation, surveillance, all of which refer to the careful and steady watching of a person, place or situation, as well as the amply used control, power, constraint, influence, leadership, commands, orders, instructions, are typically found in the position of G.

A variety of documentation, such as the constitution, laws, bylaws, acts, deals, rules, terms, as well as a wide range of conditions, provisions, circumstances, which govern or regulate a person, a state, or an organization, constitute another broad area of the instantiation of control in combination with ***under***, e.g.:

(341) *We are not free people **under** this Constitution (…)*

(342) *(…) I will let the gynandrous renegade stay here **under** one condition.*

A somewhat milder type of control is manifest when ministration, care, protection, direction, guidance, aegis, and even somebody's wing function as the denotata of G, as in the following examples from the BNC:

(343) *(…) she had always lived in two kitchens, **under** the different and indifferent ministrations of two cooks.*

(344) *Ewan would end up back **under** Roirbak's wing.*

However, almost any kind of physical and/or abstract condition that can be conceptualized as influencing one's actions can be related via control, for instance:

(345) *How many people could have been **under** such a constant strain, for so long?*

(346) *My car fell **under** suspicion.*

As shown by the examples above, states involving a severe and excessive demand on one's strength and abilities, for instance, strain, pressure, stress, suspicion, duress, compulsion, threat, attack, etc. frequently act as G when

employed with ***under***. Other states may refer to illusions, trance, spell, impression, and even discussion:

(347) *I am quite **under** the spell of your instrument, and how I enjoyed that sideways dancing!*

(348) *I was **under** the impression you despised sympathy, Miss Fanshawe.*

Finally, different types of substances typically used in medicine, e.g. anaesthetic, drugs, sedation, dentist's gas, etc., can also be distinguished among G's denotata in the sense under study:

(349) *As it was, she died **under** the anaesthetic.*

Thus, since ***under*** prompts for a relation which includes being lower than G as the semantic element of the primary sense, it is suited for developing the influence sense as well. It also seems that many linguistic expressions, as discussed above, are interpretable by means of the metaphor CONTROL IS UP, when the domain of CONTROL or POWER is conceptualized on a vertical axis, in such a way that powerful entities are viewed as being higher up than less powerful ones, which are construed as being down.

3.4.8 Semantic network

Figure 20 offers the semantic network of the English ***under***, as attested by its usage in the BNC.

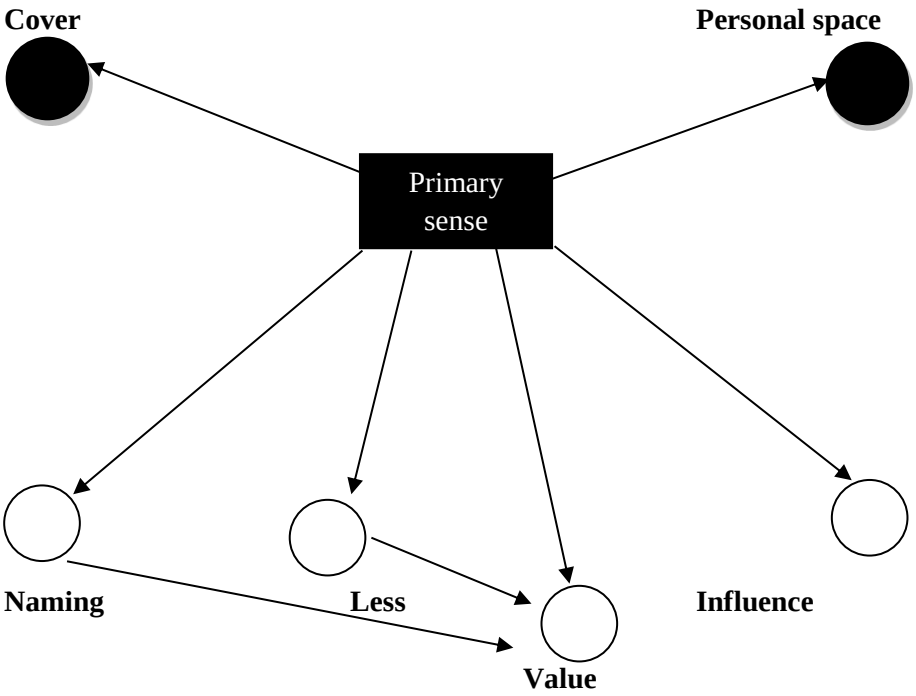


Figure 20. Semantic network of ***under***

The extension from the proto-scene, which refers to the primary sense of the preposition coding the successive arrangement of entities on the vertical line, signalling purely geometric content, to the function of cover is determined by a large two-dimensional G. The other extension in physical space, namely, personal space, manifests an element of proximity and an elevated type of G with respect to F, so the vertical axis is still preserved. The characteristics of G are also important, for it must be a person whose space is metonymically defined with reference to lexemes of human body parts (nose, etc.) or parts of buildings (e.g. windows).

However, extensions from concrete to more abstract senses of the English preposition, such as naming, less, value, and influence, seem to be determined by the features of G, which is abstract rather than concrete, giving rise to a shift in domains which is interpretable using the Theory of Conceptual Metaphor (Lakoff and Johnson 1980) and the Theory of Mental Spaces (Fauconnier 1985, 2007). Fs in such utterances are also more likely to be abstract entities, but concrete objects, including human beings, are not excluded, either. The sense of value is not only directly, but also indirectly via the senses of less and naming related to the primary sense. Thus, what are considered to be distinct senses of ***under*** are in fact derived from and

related to the primary sense of the preposition and have become part of the semantic network through routinization and entrenchment of meaning.

4. A BRIEF CROSS-LINGUISTIC OVERVIEW OF THE SEMANTIC FEATURES OF THE FOUR PREPOSITIONS

As seen in the analysis of the semantics of the Lithuanian ***žemiau***, ***po*** and the English ***below***, ***under***, they are all characterised by overlapping and specific semantic elements both in one language and across the two languages.

First of all, the selected prepositions manifest different ways of parsing space: ***žemiau*** and ***below*** give preference to geometric space, whereas ***po*** and ***under*** often additionally foregrounds aspects of functional space. The prepositions are also disparate in terms of the complexity of their semantic structure: ***žemiau*** and ***below*** are the least elaborate, therefore, displaying the simplest semantic networks. In particular, they have developed four senses, two related to physical space (the primary sense and its geography-related extension) and two associated with non-physical space (measurement and value) (cf. the only sense of "indicating the location or action of something lower" of ***žemiau*** in DCLL). The extension from the primary sense to geographical descriptions is primarily determined by an elevated ground in comparison to F, so the horizontal axis is still important. Extensions from the primary sense to the senses of measurement and value, on the other hand, take place due to a change in domains, which can be accounted for in terms of the Conceptual Metaphor Theory (Lakoff and Johnson 1980) and the Theory of Mental Spaces (Fauconnier 1985, 2007).

Overall, a low number of extensions in the two semantic networks might have resulted from a relatively rare usage of the prepositions, ***žemiau*** in particular, in the selected register in the corpora. In fact, ***žemiau*** and ***below*** usually do not allow contact between the entities, which consequently precludes a wide range of interactions between objects. On the other hand, such results might have also been determined by the neighbouring categories, namely, ***po*** and ***under***, which produce significantly higher frequency scores in the corpora, resulting in rather complex semantic networks in terms of the number and positioning of extensions. As far as differences beween ***žemiau*** and ***below*** are concerned, they mainly refer to disparate tendencies in the frequency instantiation of concrete vs. abstract senses. For instance, even though both prepositions prefer the physical domain, the tendency is stronger for the English one (cf. ***žemiau***: 73.9% vs. ***below***: 92.9%, respectively, see Table 2 and 8).

Po and ***under***, on the other hand, differ both in the higher number of senses than their synonyms ***žemiau*** and ***below***, respectively, and more intricate semantic networks. For instance, ***po*** has manifested as many as 13

senses related to each other in two semantic networks: five in the physical domain, such as the primary sense, cover, personal space, direction, and pervasion, and eight in the non-physical domain, e.g. distributive quantity, lateness, temporal persistence, temporal sequence, temporal consistency, submission, annoyance, and truth. The primary sense, which was determined by the physical aspect of G situated directly over F, acts as a derivational basis for other extensions. By way of example, cover typically demands the configuration of the entities along the negative value of the vertical line; however, a two-dimensional G becomes of primary importance. The other concrete senses, i.e. personal space and direction, entail an elevated G with respect to F, so the vertical axis is still retained; however, an element of proximity becomes part of the semantic structure. Pervasion, which is the last concrete sense of the preposition, is already linked to the horizontal axis, and highlights the iterative movement of F over G as a two- or three-dimensional entity. Distributive quantity, on the other hand, which also involves the horizontal axis, signals the gradability of the sense, for it can pertain to physical and non-physical space.

As far as the abstract senses of ***po*** are concerned, the majority of them, namely, four temporal senses, such as lateness, persistence, sequence, and consistency, are associated with situating events along the horizontal axis. A shift from physical space to that of temporal relations can be accounted for in terms of the Conceptual Metaphor Theory (Lakoff and Johnson 1980). The remaining abstract senses, i.e. submission, annoyance, and truth, entail the location of the entities along the negative value of the vertical axis in non-physical space; hence the down cluster again. Thus, even though the two networks seem to be intricate, their structure is based on interrelationships, with constant reference being made to the primary sense and those senses closest to it (e.g. via personal space or temporal sequence) in the first network, or to the pervasion sense in the second network.

All in all, it seems that a large number of senses of ***po*** might be accounted for by its semantic peculiarities, for it allows contact between the entities, which consequently gives rise to a wide range of interactions between objects. However, being the consequence of the characteristics of the objects in a spatial relationship, contact does not make the defining feature in the semantic structure of the preposition under analysis. On the other hand, the number of senses do not constitute the only difference between ***po*** and ***žemiau***. The other disparity pertains to the frequency of their instantiation in different domains. For instance, ***po*** seems to prefer non-physical space, whereas ***žemiau***, as discussed earlier, tends to develop senses in contexts related to physical space (cf. 35% vs. 65 % for ***po***, see Table 4; 73.9% vs.

26.1% for ***žemiau***, see Table 2); hence the importance of the neighbouring categories for the extension of a category.

Under seems to have developed seven senses: three related to physical space (the primary sense, cover and personal space) and four associated with non-physical space (naming, less, value, and influence). Even though manifesting a high frequency of occurrence in the selected corpus, it displays a noticeably less complex semantic structure than ***po***, the primary translation equivalent in Lithuanian. A smaller number of senses in the ***under*** data set may be accounted for by several factors. First, it might be due to the nature of the languages under study. Lithuanian is an inflectional language, where each grammatical case is associated with a particular meaning, which influences the semantics of prepositions, ***po*** in particular. Another reason may be related to the neighbouring categories. However, the English preposition is rather prolific in terms of the number of senses as compared with its competing near synonym ***below***, for it allows contact between the entities, consequently giving rise to a multitude of interactions between objects.

The primary sense of ***under***, primarily relying on the physical configuration of F directly underneath G, acts as a derivational basis for multiple extensions in various domains. For instance, cover typically demands the arrangement of the entities along the negative value of the vertical axis and a lanrge two-dimensional G. Personal space retains an elevated G with respect to F, but has an additional element of proximity. These three concrete senses are also identifiable in ***po***. The abstract senses of ***under***, i.e. naming, less, value, and influence, are associated with situating entities along the negative value of the vertical axis in non-physical space. However, the abstract senses of the English preposition diverge from the ones associated with non-physical space in the semantic structure of ***po***.

All in all, ***under*** seems to code not only geometric but also functional relations, which is line with Coventry *et al.* (2001) who prove by means of psycholingvistic experiments that this preposition is more sensitive to functional relations than ***below***. The tendencies to develop senses in different domains for the two prepositions also posit a significant variation. Namely, in terms of the frequency of instantiation, the quantitative analysis has shown that ***under***, like ***below***, is far more frequently employed in the physical domain, as compared with ***po***, which predominates in the non-physical domain even though illustrating the same type of segmenting space (***under***: 75.2 %, see Table 10 vs. ***po***: 65 %, see Table 4, respectively).

Thus, the findings of the dissertation research have shown that attempting to embrace all the senses of the prepositions using general concepts, such as

"lower than", "locative lower", "holding/moving to a lower position", "a boundary under which something is located or is happening", as it is frequent in traditional studies, does not display the intricacy of their semantic structures. Rather, such concepts may be useful only in the definition of the most typical spatial scenes (cf. ***below*** and ***under*** in Bennett 1975; Lindkvist 1976; ***žemiau*** and ***po*** in Šukys 1998: 538; Ambrazas 2005: 444, 2006: 300). Having established the semantic elements anew to provide unambiguous descriptions, the contrastive analysis has also revealed that the English prepositions do not necessarily act as primary translation equivalents of ***žemiau*** and ***po***, as indicated by some bilingual dictionaries (Piesarskas and Svecevičius 1997; Piesarskas 2006). Meaning extension has also been accounted for in a principled, systematic way in the present study, which is not in line with sporadic discussions of the prepositional meanings related to various conceptual domains in other cognitively-oriented works (cf. Taylor 1993; Dirven 1993; Šeškauskienė 2001).

CONCLUSIONS AND FURTHER IMPLICATIONS OF THE THE STUDY

The main goal of this dissertation was to investigate the semantic micro-structure of the Lithuanian ***žemiau***, ***po***, and the English ***below***, ***under*** as reflected in the two Internet corpora, the CCLL and the BNC. This section provides the following conclusions:

(1) The prepositions manifest a number of senses associated with physical and non-physical space. For instance, the Lithuanian ***žemiau*** + GEN and the English ***below*** have the following senses: (1) primary, as in ***žemiau*** *kabinos penketas iliuminatorių* 'five portlights **below** the gear box', or *muscles* ***below*** *the rolled-up sleeves*; (2) geography-related, e.g. *Jeloustounas* ***žemiau*** *kontinentinės plokštės* 'Yellowstone **below** the continental plate', or *the Thames* ***below*** *Oxford*; (3) measurement, as in *valties greitis* ***žemiau*** *Šeldono konstantos* 'the speed of the boat **below** the Sheldon constant', or *temperatures* ***below*** *zero*; (4) value, e.g. *prasidėti su manimi – **žemiau** jos orumo* 'to start an affair with me – **below** her dignity', or *Dr. Stevie's playing well* ***below*** *his handicap*.

The Lithuanian ***po*** + GEN/DAT/ACC/INS and the English ***under***, on the other hand, manifest many more senses than ***žemiau*** and ***below***. For instance, ***po*** has the following senses: (1) primary, as in *moteris* ***po*** *paveikslu* 'a woman **under** a picture'; (2) cover, e.g. *miegu* ***po*** *antklode* 'I sleep **under** a blanket'; (3) personal space, as in *peilis* ***po*** *ranka* 'a knife **at** one's hand'; (4) direction, e.g. ***po*** *kairei ir* ***po*** *dešinei duobės* 'potholes **on** the left and **on** the right'; (5) pervasion, as in *pasklinda vestuvininkai* ***po*** *mišką* 'members of the wedding party overspread **in** the forest'; (6) temporal sequence, e.g. *susitikim* ***po*** *savaitės* 'let's meet **in/after** a week'; (7) temporal consistency, as in *stikliukas* ***po*** *stikliuko* 'one shot **after** another shot'; (8) temporal persistence, e.g. *viskas* ***po*** *senovei* 'everything has remained the same/unchanged'; (9) lateness, as in *jau* ***po*** *laiko, gerokai pavėlavai* 'it is too late, you are too late'; (10) submission, as in *jis padėjo savo sielą viešpačiams* ***po*** *kojomis* 'he put his soul **under** the gods' feet'; (11) annoyance, e.g. *ką* ***po*** *galais aš padariau?* 'what on earth did I do?'; (12) truth, as in ***po*** *teisybei, aš pavargau* 'to tell the truth, I got tired'; (13) distributive quantity, e.g. *jie nunešė* ***po*** *keletą baslių* 'they took several stakes each', ***po*** *truputį sveikstu* 'I'm getting better slowly'.

The English ***under*** exhibits the following senses: (1) primary, as in *a space* ***under*** *the metal curtain*; (2) cover, e.g. *his head* ***under*** *his pillow*; (3) personal space, as in *Erika* ***under*** *the nose of the Minister*; (4) naming, e.g. *a*

fund ***under*** *the name of another firm*; (5) less, as in *everyone* ***under*** *sixteen*; (6) value, e.g. *Otley muttered* ***under*** *his breath*; (7) influence, as in *I am* ***under*** *the influence of my friends' euphoria*.

The senses of the four prepositions were distinguished according to different types of F and G, such as people, human body parts, inanimate concrete objects, abstract entities, processes/actions/states, and their various combinations, for instance, the human body in the position of F used with G as a concrete entity, or F denoting an abstract object employed with an abstract entity functioning as G, etc. Such combinations of different types of F and G were especially useful while identifying the primary sense, which should emphasize the physical rather than non-physical aspect of the entities, which is in line with the experiential approach and the principle of embodiment. Geometric and functional relationships between F and G also play a major role in the description of the semantic structures under study. As far as geometric configuration is concerned, it became crucial for the primary sense identification procedure for each preposition. For instance, ***žemiau*** and ***below*** do not code the concentrated location of F lower than G along the negative value of the vertical axis. The "loose" place of F with respect to G is even more emphasized in geographical descriptions. G is typically conceptualized as a line or reduced to a point. ***Po*** and ***under***, on the other hand, highlight the successive arrangement of the entities along the vertical axis, which gives rise to functional relations as manifested in several other concrete senses, for instance, cover and personal space. Interestingly, in case of ***po***, the succession of F and G in physical space along the vertical axis is retained in the horizontal axis as well, which strengthens the hypothesis of the relationship between the temporal sequence meaning and the primary sense.

The investigation also makes a tentative attempt to interrelate the meaning of a noun case featuring in the semantic structure of the prepositions in Lithuanian. For instance, the usage of ***žemiau*** + GEN is motivated, for the case is considered to denote a reference point in cognitive grammar accounts. The direction sense of ***po*** + DAT, which is typical of some dialects, resembles the meaning of the Locative case denoting localization, for both cases are historically derived from the same form. The way that the two entities interact with each other in the pervasion and distributive quantity senses of ***po*** + ACC is in line with cognitive works emphasizing total affectedness, accounting for such concrete uses of the case as direction or destination, or pointing out a dynamic element as the underlying key notion of the case.

(2) The meanings of the Lithuanian ***žemiau***, ***po*** and the English ***below***, ***under***, associated with both physical and non-physical space, are radially structured categories organized by various direct or indirect relationships with the primary sense which is based on a proto-spatial scene of F directly or not necessarily lower than G. All the four senses of ***žemiau*** and ***below*** are arranged in a single semantic network for each preposition. The English ***under*** also manifests the same tendency, having all the senses organized around the primary sense. The Lithuanian ***po***, on the other hand, has two semantic networks, as it was difficult to establish motivated relations between the semantic elements of the proto-scene (INS) and the senses when the preposition is used with ACC.

Conceptual metaphors seem to offer an insightful model for semantic extension during which some elements manifest an increase in the level of abstraction or become backgrounded due to other elements relevant for the spatial scene. For instance, verticality enters our experience, giving rise to the orientational LESS IS DOWN metaphor entailing a decrease in quantity as a downward motion, which is relevant for the sense of measurement in case of ***žemiau*** and ***below***, as in the utterances *temperatūra nukrisdavo gerokai* ***žemiau*** *nulio* 'the temperature would fall well **below** zero', or *lowering that day's efficiency to* ***below*** *fifty per cent*. LOW STATUS IS DOWN, LOW QUALITY IS DOWN, which also reflect a downward orientation, explain the usage of the two prepositions in their value sense, for instance, *tai atrodė prasta, negabu, kvaila,* ***žemiau*** *kritikos* 'it looked bad, talentless, stupid, **below** criticism', or *he was two fathoms* ***below*** *useless*. The deeply entrenched metaphor TIME IS SPACE, when the spatial arrangement of entities gives rise to the sequential location of events in time, helps to interpret the relationship beween the temporal sequence sense, e.g. ***po*** *metų* '**in**/**after** a year', and the primary sense in the semantic structure of ***po***. The underlying motivation for the submission sense of the same preposition, as in *Džensenas, kurį Sintija pamynė* ***po*** *padu* 'Jensen who appeared **under** Sintija's thumb' is the orientational metaphor BEING SUBJECT TO CONTROL OR FORCE IS DOWN, signalling the arrangement of the entities in terms of metaphorical verticality, when F accepts or yields to a superior force, will or authority of a person functioning as G. In case of the influence sense of ***under***, such linguistic expressions as *Surkov and Rozanov became characters* ***under*** *my control* are also interpretable by means of the same metaphor, when the domain of control or power is conceptualized on a vertical axis, in such a way that powerful entities are viewed as being higher than less powerful ones, which are construed as being down.

(3) The prepositions under study manifest different ways of parsing space within and across the languages: ***žemiau*** and ***below*** give preference to geometric space characterized by topological properties of spatially aligned objects, whereas ***po*** and ***under*** entail not only geometric but also qualitative space relating to functional relations between the entities. Moreover, ***žemiau*** and ***below*** develop senses related to physical rather than non-physical space, whereas ***po*** and ***under*** behave differently: ***po*** prefers non-physical space, while ***under*** tends to develop senses in physical contexts. The selected prepositions also differ as to the complexity of their semantic structure: ***žemiau*** and ***below*** are rather simple compared to ***po*** and ***under***, both in terms of the number of senses and their positioning in the established semantic networks. Finally, on the basis of qualitative and quantitative approaches across the languages studied, ***žemiau*** and ***below*** are closer synonyms than ***po*** and ***under*** in terms of the coincidence of the established senses associated with physical and non-physical space. On the other hand, the intra-linguistic investigation has displayed that ***žemiau*** and ***po***, and ***below*** and ***under*** do not behave as competing synonyms, which is in line with the economy principle in language.

(4) Focusing on motivated polysemy of the selected prepositions on the basis of corpus data, the dissertation has enabled a different insight into the long catalogue of irregular and idiomatic meanings listed in dictionary entries and traditional linguistic descriptions. Moreover, motivated polysemy, as shown by the intricate networks of concrete and abstract prepositional senses, rules out the possibility of cross-referential definitions which are still found in older versions of dictionaries of Lithuanian. The complexity of the semantic structures under analysis has also questioned the lexicographic definitions that include as few as one sense, showing exclusively spatial relations. However, such dictionaries of Lithuanian should not be blamed for they could not rely on corpus analysis, which was available for editors abroad (cf. COBUILD). Thus, new dictionaries of Lithuanian must be compiled using a corpus-based approach to obtain objective empirical data to investigate semantic peculiarities.

The above recommendation also applies to contemporary studies of prepositional semantics, which is closely related to the other goal of the dissertation. In particular, in terms of Tyler and Evans' (2003) Principled Polysemy Model, as employed on a set of typologically different languages to which it has not been applied before, the investigation has cast doubts on the validity of their methodology for studying motivated polysemy. For instance, the authors' primary sense identification criteria, which were based on an insufficient number of examples, had to be reset in the present

research to go along with the corpus data (cf. the frequency and diachronic factors which have lost their primary importance). Drawing on the data from the two corpora, the present study has shown that the semantic elements in the primary senses of ***below*** and ***under*** differ from the ones established in Tyler and Evans' (2003: 130) investigation. In particular, the undefined place of F with reference to G in case of ***below*** as opposed to the successive arrangement of the entities along the vertical axis in case of ***under***, as established in the present study, do not match purely geometric content vs. functional relations, as distinguished in the work advocating the Principled Polysemy model, which in turn changes the overall structure of the semantic networks of the English prepositions. For instance, the authors distinguish five senses of ***below***: (1) the primary sense based on the proto-spatial scene; (2) topographical distance, which corresponds to geographical descriptions in this study; (3) the less sense, which is referred to as measurement here; (4) the inferior sense, which corresponds to the sense of value in the present research; and (5) the next-one-down sense, as in the utterance *Not that one, the box* ***below*** *it!* (*ibid*. p. 129), which is subsumed under the primary sense in this dissertation. As a result, the authors' semantic network of ***below*** differs from the network given here. For instance, in their investigation, all the senses are directly derived from the primary sense, while in this study, some senses, e.g. measurement and value, are interrelated among themselves as well, which iliustrates not only direct but also indirect links with the primary sense of the preposition.

The semantic structure of the English ***under***, as discussed in Tyler and Evans' (*ibid*. p. 123-127) work, also manifests some disparities in comparison with the senses of the preposition presented here. The authors distinguish the following senses: (1) the primary sense based on the proto-scene; (2) covering; (3) the less sense; (4) control, which is referred to as influence in this dissertation; (5) the non-existence sense, as in the utterance *Typically, to prevent animals from disturbing the grave, the dead person is buried* ***under*** *six feet of dirt* (*ibid*. p. 127), which would be treated as the primary sense in the present study. The senses of personal space, naming, and value, as identified on the basis of the concordance lines from the two corpora, are not distinguished in their semantic network of the preposition at all (*ibid*. p. 124). The indirect links of some senses with the primary sense are not established, either (cf. the relationship between the senses of less and value for ***below***, or between naming and value for ***under*** in this study).

All in all, focussing on the meaning of ***žemiau***, ***po*** and ***below***, ***under***, the dissertation is among the first cross-linguistic studies on the synchronic state of modern Lithuanian and English, prepositional semantics in particular, in

Lithuanian linguistics and abroad. Therefore, it adds to understanding the role of a preposition in the organization of the conceptual content, which has a practical application for the development of the theory of word meaning, lexicography and translation. Moreover, a semantic approach to prepositions in the tradition of cognitive linguistics is a valuable didactic tool in language acquisition studies. For instance, scientific enquiries into what individual words mean (cf. the collocationist view emphasizing phrases that they occur in) can lead to useful methodological suggestions, such as using schematic pictures in classrooms or textbooks, relating late-taught senses to the ones learnt earlier, explicating metaphorical extensions, clarifying the fine-drawn distinction of semantically-related prepositions, and other opportunities to help learners understand unfamiliar uses. Finally, the dissertation illustrates how cognitive linguistics facilitates the understanding of relations among languages and cultures by inclusion of extralinguistic knowledge in linguistic categories. No wonder then that this branch of science is a new line of research which is relevant to the identities of thousands of speech communities.

Further implications of the study. Even though the dissertation has extended previous international research and supported the efforts of Lithuanian scientists to apply the principles of cognitive linguistics to prepositional meaning, it also has some avenues for further research. First, the number and status of nodes in the established semantic networks are likely to vary between individuals according to their personal experience, which similarities they perceive, which generalisations they make etc. Thus, any attempt to make conclusive statements about semantic structures in a given language can only be a hypothesis about the organisation of concepts by one or more individuals rather than by all members of a language community. However, the internal structure of the established networks is also likely to change not only from person to person, but also evolve over time. Therefore, a tempting undertaking would be to test the hypotheses about the semantic peculiarities of the prepositions put forward here by conducting relevant psycholinguistic experiments. Further research using a computer programme to generate maps based on multidimensional scaling (MDS) might constitute another possible direction in studies of prepositional meaning. Such maps allow to visualize the level of proximity or similarity of individual cases in a dataset in the form of analytical tools, including tables and graphs, and, therefore, come useful when making intra- and/or cross-linguistic comparisons with the semantic networks established in this dissertation.

The present study has also been limited in scope while extracting senses of as few as four prepositions. Therefore, it would be beneficial to conduct similar research on the remaining Lithuanian and English prepositions in order to further tailor Tyler and Evans' (2003) methodology in practice, which may consequently lead to more fine-grained descriptions of meaning. The fact that ***po*** studied here is one of the most semantically complicated prepositions in Lithuanian implies that this future endeavour is quite a manageable task. In addition to Lithuanian and English, other languages, both closely related and typologically different, may also be interesting to investigate so as to gain fresh insight into the peculiarities of prepositional semantics. However, when focusing on inflecting languages, like Lithuanian, more attention should be given to noun cases as well, because spatial relations are expressed by case forms alone and therefore both necessarily contribute to the semantics of prepositional constructions.

Furthermore, the selection of the corpora should also be expanded. For instance, even though the BNC had an update in 2014, any changes that had occurred before that year may not show up in this corpus, which may have important implications in terms of how it represents contemporary English. Therefore, in order to avoid looking increasingly insular as time goes on, future research might as well be modelled not only with the BNC2014 but also with other sources, for instance, the Corpus of Contemporary American English (COCA), which is more recent and larger than the BNC (560 million vs. 100 million words, respectively). As for the Lithuanian data, it may also be extracted from the Corpus Academicum Lithuanicum (CorALit), which is a specialized, synchronic, written corpus compiled at Vilnius University, providing open access to the disciplinary variety of academic language. Therefore, it may serve as an excellent source for establishing abstract senses of Lithuanian prepositions, thereby contributing to a more adequate representation of their semantic structures. Finally, it may be interesting to include data not only from fiction but also from spoken language, for the latter shows less conformity to the norms and conventions of the written standard language, which may quite conceivably revise the proposed investigation and hypotheses about the senses of prepositions in Lithuanian, English, or any other language.

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DATA SOURCES

CCLL – *Corpus of the contemporary Lithuanian language* (Dabartinės lietuvių kalbos tekstynas). Available at: http://tekstynas.vdu.lt/tekstynas/.

CED – *Cambridge English dictionary*. Available at: https://dictionary.cambridge.org/.

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DCLL – *Dabartinės lietuvių kalbos žodynas* [Dictionary of the contemporary Lithuanian language]. Available at http://lkiis.lki.lt/.

DLL – *Lietuvių kalbos žodynas* [Dictionary of the Lithuanian language]. Available at http://www.lkz.lt/.

DSLL – *Bendrinės lietuvių kalbos žodynas* [Dictionary of the standard Lithuanian language]. Available at http://bkz.lki.lt/.

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APPENDICES

The raw data from the CCLL and the BNC as employed in the present research is given in the CD attached at the end of the dissertation.

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CONFERENCE CONTRIBUTIONS

1. *On spatial relations in cross-linguistic studies: different approaches to prepositional semantics*. Paper presented in the 12th International Congress of Balticists. Vilnius University, Lithuania, October 28-31, 2015.
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4. *On the motivated polysemy of the Lithuanian **PO** and the English **UNDER***. Paper presented in the 15th International Cognitive Linguistics Conference (ICLC 15) "Cross-linguistic Perspectives on Cognitive Linguistics". Kwansei Gakuin University, Nishinomiya, Japan, August 6-11, 2019.
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