Spatial Minds

Spatial Minds:

Conceptual Correlations of Spatial Prepositions in Hungarian, Croatian and English

By

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LIST OF ABBREVIATIONS

LM	landmark
TR	trajectory
A	(a member of the) containment category
B	(a member of the) support category
C	(a member of the) adjacency category
1	(a member of the) destination category
2	(a member of the) location category
3	(a member of the) source category
Q	question
RT	response time
CA	correctly answered
IA	incorrectly answered
NA	not answered
ACC	accusative case
LOC	locative case
GEN	genitive case
R	relation
M	motion
CON	containment
SUP	support
ADJ	adjacency
Y	"corresponding pairs" category
DIR A	"direction away" category
DIR T	"direction towards" category
STAT	"static" category
SF A, B, C	"suffix family" category for categories of containment (A), support (B), and adjacency (C)
SUB	"substitution" category
OPP	"opposition" category

PREFACE

> *Nothing exists except atoms and empty space;*
> *everything else is opinion.*
> —Democritus

Spatial language is prevalent in every aspect of human life, which is why people think of it as pedestrian and commonplace, despite its uniqueness. However, though it may seem simple, it offers an interesting insight into the human mind. Namely, language connects our minds and the spatial reality, and is closely related to human conceptualization. As Chilton (2010, 2) rightly remarks:

> We can assume that communicating about spatial locations and movements is one area that has particular significance in the evolution of language and languages. And possibly it is the most fundamental area.

Many human experiences are not spatial, but are interpreted with the help of spatial concepts, underlining the importance of our spatial awareness and experience. But to what extent is spatial language connected to spatial conceptualization? Furthermore, is a particular system of spatial representation universal to all humans, or is it influenced by the different languages we speak?

A set of concepts of nine basic spatial expressions involving the prepositions *in*, *on*, and *at* is analysed in this book, both morphologically and psycholinguistically, in order to shed light on their mutual relationship in language and in the mind. The research was undertaken both intra- and cross-linguistically, in languages that belong to three different European language groups: Finno-Ugric (Hungarian), Slavic (Croatian), and Germanic (English). Such an approach provides details on how different or similar the spatial conceptualizations of the speakers of these three languages are.

This study investigates the similarities and differences between conceptual and morphological spatial categories, i.e. between mind and language. It is argued that the three languages share these categories, yet vary in the mutual relations of their members. One might expect that the speakers' spatial conceptualization has altered due to global communication and new technologies, becoming more similar across languages unlike

morphology, which tends to change more slowly. Thus, this study questions to what extent human conceptualization may be formed or influenced by language, and how much external factors can invade the mind-language relation.

These issues are presented here in a clear and simple manner, making the book accessible to students of linguistics, and to language enthusiasts from other fields. The first chapter provides an introduction to the theoretical background of the field, which is followed in Chapter Two by a description of the spatial concepts and categories investigated in our study. Chapter Three describes a case study involving spatial prepositions in the three languages analyzed, along with the method, a sample and the procedure. A comparative morphological analysis of the semantic sets in the three languages can be found in Chapter Four, followed by the results of the psycholinguistic and corpus analysis, and discussion in Chapter Five. The conclusion in Chapter Six completes the study.

CHAPTER ONE

PREPOSITIONS AND SPACE

Every language contains certain linguistic constructions that specify space. These include noun satellites[1], noun endings, independent words, and different kinds of constructions. The first two and their combination are the focus of this study, as grammatical items that modify the spatial relationship of lexemes. These items vary cross-linguistically, but among the best known are prepositions, as in English or Italian, and the combination of prepositions and cases, as in the Slavic languages or languages such as German and Latin. They can also appear as suffixes on nouns, as in Hungarian or Finnish. These three systems are capable of expressing the same spatial relationship with no difference in meaning, and their expressions will therefore be treated as mutually corresponding.

Each of these spatial grammatical items carries multiple concepts, which vary from context to context. In fact, they are highly polysemous as they carry not only spatial meaning, but also temporal and metaphorical ones. The best example is given in Brugman's study of the preposition *over* (1981 [1988]), which has around 20 distinct spatial variations. In that heap of meanings it might seem difficult to distinguish the most characteristic, yet speakers invariably point out one or two that they consider to be basic meanings. The key to achieving this is in the fundamental, or "ideal" meaning (Herskovits 1982, 1986) that the preposition carries, which shall be dealt with in more detail in section 1.2 This meaning then spreads by means of polysemy or metaphor into other distinct meanings. To be able to see the fuzzy borders of each preposition's ideal meaning, one needs the help of linguistic tools, as shown in the following sections.

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[1] Satellites, in linguistic terms, are lexical items (Dik 1989) that modify the meaning of an expression in whose near proximity they are situated (on verb satellites, cf. Talmy 1985). In this respect and pertinent to this study, noun satellites are prepositions as found in Croatian and English (see 4.2. and 4.3.).

1.1. Concepts and categorization

One of the essential notions in linguistics is that of concept, commonly defined as a general idea or notion. More specifically, concepts are basic "units of reason and linguistic meaning" (Lakoff and Gallese 2005), and are therefore conventional and relatively stable. They are usually defined with the help of other concepts, and most of them have a broader context, or scenario. For example, a waiter is characterized by a restaurant scenario, and a buyer by a commercial exchange scenario (Lakoff 1987, 286).

Categorization, on the other hand, is a means of distributing knowledge into meaningful structural units (categories), based on their associativeness, also called family resemblance (cf. Wittgenstein 1986), which helps us access stored entities when needed. Family resemblance reflects the resemblances or attributes the members of a certain category share. Relative to the previous explanation, there is a concept underlying each category: i.e. every category is based on a certain concept (Lakoff 1987).

a   b   c
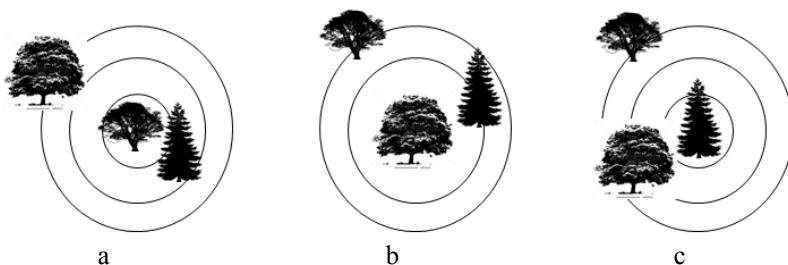
Figure 1. Radial category structure of a tree typical of (a) Mediterranean, (b) continental, and (c) mountainous regions

There are many different features of categories, of which only a few will be mentioned here. The radial category structure is defined by the notion of "the best fit". The best example of a category, i.e. the prototype, is placed in the center of the category, with the other entities situated radially around it, closer or further away according to how well they fit the prescribed features (Rosch 1973). We can take the concept of *a tree* as an example (see Figure 1). Depending on geographical allocation, the inhabitants of various parts of the world may have different prototypes of a tree in their mind. For example, in Central and South Europe, people from the Mediterranean will have an olive tree as their first association, people from inland areas (or the continent) an oak tree, and people living in the

mountains a pine tree. This implies that categories are culturally determined. Further, the borders between categories are not sharply defined, but fuzzy[2] (Rosch 1973). They can also overlap; for example turquoise can fall under the color blue as well as green, as it is a mixture of both.

Categorization is an important part of organizing concepts in our minds. Spatial concepts may also be organized in such a manner, regardless of their word class. Due to language economy, spatial concepts are used not only for designating spatial relations, but for many other purposes too, shifting the meaning further from its basis. The following section will focus on the basic spatial meaning of prepositions.

1.2. Prepositional meanings

In the context of this research, spatial prepositions and endings may be categorized in the same way as shown in the previous section. These categories also spread radially from the most fundamental concept to the most metaphorical one[3]. The central part of the radial structure may contain only one particular concept, i.e. the fundamental concept, while the other radial circles may have numerous members.

Categories can be structured according to many factors, such as form and meaning. Expressions having the same form and involving the concept of *in* can therefore be segmented according to the change in their meaning. Looking at Figure 2, in the center the primary meaning is spatial: *in the box*. Further out, in the second circle, the meaning changes. The expression *in school* has the spatial meaning of being located within the denoted building, and an additional meaning of being a pupil or an employee of the institution. In this stage the basic meaning of the expression is still recognizable, and there is a radial division amongst members based on the principle of being more or less similar to the central meaning. Finally, in the outer circle the fundamental spatial meaning has little to do with the metaphorically extended meaning, as *in time*.

If a category of a preposition is structured according to similarity of meaning, it would include expressions involving other prepositions as

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[2] The term "fuzzy concept" was first used by Iranian computer scientist Lofti Zadeh (1965) to define a characteristic of a concept as applying "to a certain degree or extent". Lakoff (1973) used the term in linguistics, to describe hedges in his interpretation of categories, building up on Rosch's (1973) research.
[3] The literal senses of a word, as opposed to the metaphorical ones, are considered to be conceptually primary, and therefore also explanatorily primary (cf. Lakoff and Johnson 1980, Lakoff 1987).

well. In Figure 3, the concept of *at* is compared to three other concepts. *In front of, next to* and *behind* are the closest concepts in meaning to the central concept of *at*. The concept of *near* has the most divergent meaning, since one can be located *near* a specific place, and still not be *at* that place. A reference to the difference among these concepts can be found in section 4.3.
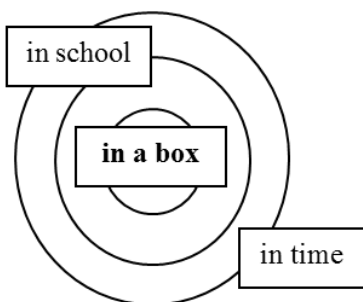
Figure 2. The radial category structure of *in* (form)
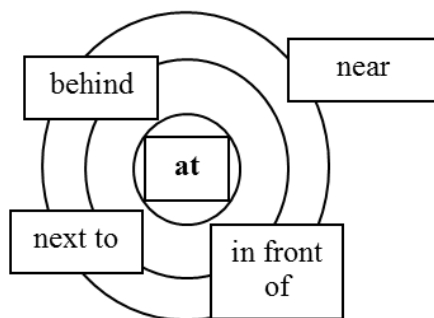
Figure 3. The radial category structure of *at* (meaning)

Looking back to Figure 1, we can justly conclude that there are differences in the array of radial meanings, which apply to different languages as well as different cultures. The changes consider a shift of meaning as in Figure 2, or one expression in one language being expressed with a different preposition or ending, or in a completely different way. For example, *za stolom* is the Croatian expression for *at the table*, yet *at* is commonly translated as *kod* in Croatian. This makes the former part of a completely

different semantic field. Moreover, the overlapping meanings of some phrases can appear within a single language, as Figure 4 shows. *In the box* and *on the table* have distinct meanings, while *in the street* and *on the street* are quite similar in meaning, with a slight conceptual difference.
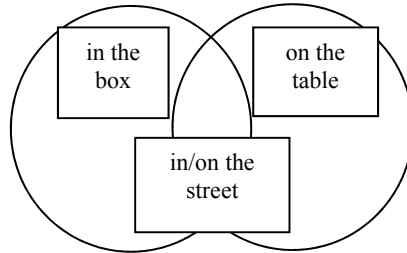
Figure 4. Overlapping category borders

Spatial prepositions are highly polysemous, and determining their basic or core meaning has been a matter of much linguistic debate over the past decades. This debate centers around whether all spatial uses of different prepositions can be accounted for with a single meaning, or if we should assume the existence of a relatively large number of different meanings for each preposition. In his discussion of this problem, Bennett (1975) considers the latter to be an informal position, well-suited to teaching English to non-native speakers, but not very suitable

> when one sets out to present a rather more formalized account of the meaning of English prepositions within the framework of an explicit theory of the structure of language (Bennett 1975, 5).

Instead, in what he calls an "essay in stratificational semantics", Bennett proposes that differences in meaning lie in the context in which a preposition is found, rather than in the preposition itself[4]. He refines the claim (put forward by opponents of multiple-meaning analysis) that *at*, *on* and *in* have essentially the same meaning, and that the choice of one meaning over another depends on the nature of the referent of the noun with which a particular preposition occurs. "What matters", says Bennett (1975, 67), "is the way an object is thought of on a particular occasion.

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[4] Bennett was among the rare linguists in the 1970s (others included Lehrer 1974, Wierzbicka 1976 and Fillmore 1977) to show interest in the issue of prepositions, and to draw attention to semantic investigation rather than the formal aspects of language.

[…] Since *at*, *on* and *in* occur in the realization of simple locative expressions, it is clear that they have a locative meaning."[5] He then proposes the following componential definitions for these three prepositions: *at*: "locative", *on*: "locative surface", and *in*: "locative interior." To do this, he draws on Jakobson's (1932, 1936) notion of "Gesamtbedeutung":

> The Gesamtbedeutung of an item […] is the general meaning that it has in isolation, or that is independent of the context when the item occurs in a particular utterance. In a given context the item appears to have a specific meaning ("Sonderbedeutung") but this results from the contribution of the meanings of neighbouring items (Bennett 1975, 10).

Picking up on this debate some twenty years later, Lindstromberg (1996) puts forward a critique of the then dominant theories of word meaning generally applied in ELT. He does so in an attempt to provide a new approach to teaching prepositions, based on prototype semantics. Lindstromberg first contrasts the single-meaning approach with the "collocational" approach. The former is illustrated by Ruhl's (1989) claim that polysemy is an illusion, arising when we mistakenly believe the meaning of a word that we inferred from the context to be inherent in that word. Thus Ruhl argues that a word may have a wide range of different uses, but a single "general" (and often quite abstract) meaning. The problem with this view is that words with diverse uses (which prepositions are) would then have a general meaning so abstract as to become inexpressible. Conversely, the collocational approach[6] sees highly frequent words as delexicalized, i.e. not having a meaning common to all or some of their uses (or contexts)[7]. This approach shifts attention from single

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[5] Locative terms may be considered relational (as opposed to directional) since they are used to localize objects relative to other objects (cf. Wunderlich and Herweg 1991, 760).

[6] Through this approach, Lindstromberg (1996) subsumes lexicographers such as Benson *et al*. (1986) and Sinclair (1987).

[7] It is worth noting that the preposition *of* has (especially in the generative tradition) long been considered the best example of a meaningless syntactic element that is moved around a sentence for purely grammatical reasons. Calling this long-term treatment of this preposition the "*of*-abuse", Langacker (2000, 73) provides evidence that "even *of*—the English preposition for which such an analysis seems most plausible—can in fact be ascribed a semantic value that motivates its grammatical behavior." He calls the preposition *of* "arguably the most tenuous of the English prepositions from the semantic standpoint […] if only by virtue of being abstract and lacking a basic spatial value." (2000, 77). In Langacker's view, *of* must be regarded as polysemous, profiling an intrinsic

words to recurring combinations of words, which, in the case of prepositions and their meanings implies that they must be learned phrase by phrase. However, this is not only uneconomical, but also psychologically implausible, as Bennett (1975, 5) was aware when he stated that "we presumably do not store every single occurrence of a given lexeme that we have ever encountered." Lindstromberg (1996, 227) also believes that the collocational account "greatly underestimates the extent to which prepositional semantics is systematic." He therefore opts for the prototype approach to representing prepositional meaning proposed by Brugman (1981 [1988]) and Lakoff (1987) within the framework of Cognitive Grammar. This "modular" approach maintains that individual words have a small number of **related** meanings. These meanings are then combined with the meanings of other words to form overall meanings, thus enabling a person to make sense of unfamiliar uses of a preposition by relating them to meanings that are already known (Lindstromberg 1996, 235).

Cognitive Grammar (Lakoff 1987, Langacker 1987) placed prepositions in the center of linguistic investigation. As spatial expressions, they are highly representative of the nature of linguistic meaning, which is considered encyclopedic in nature,

> comprising knowledge about basic as well as specific domains, knowledge about language use, which is related to knowledge about social conventions and other behavioral constraints. (Zelinsky-Wibbelt 1993, 13)

To arrive at a word's meaning, we have to mentally abstract it from its instantiations, and in doing so we must impose concepts on a vast amount of varied information. The interpretation of meaning is thus performed through categorization, both in terms of prototypes, as the most typical instances of a particular semantic category, and of image schemata, as generalizations over two or more instances. Rice's (1996, 159) experiment provided evidence in favor of the claim that "there are indeed prototypical semantic values for the English prepositions, *at*, *on*, and *in*, which are definitely spatial in meaning."[8]

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relationship between the trajector and landmark, and having in each construction "a meaning related to those it displays in other uses" (Langacker 2000, 90).

[8] However, Rice (1996, 159) includes a *caveat*, saying that the results she obtained "also indicate that temporal senses are just as salient, and […] seem to be equally concrete and completely independent semantically." This pertains to the fact that cognitive linguistics commonly considers time to be a straightforward metaphorical extension of space.

In describing the related senses of lexemes, cognitive linguists introduced the concept of the "lexical network"—a structure of multiple interconnected nodes, extending from a central node, commonly considered the "prototype" of a given lexical category. These nodes are at varying distances conceptually, both from each other and from the central node (cf. Lakoff 1987, and Brugman and Lakoff 1988). The same concept is employed to represent the meaning of prepositions, though Sandra and Rice (1995) and Rice (1996) point out that many aspects of this kind of organization have been left unspecified, either regarding identifying the prototype of a given network,[9] or defining what a prototype actually is. Many researchers have excluded non-spatial uses of prepositions from their analyses, thus failing to capture the entire of range of prepositional meanings. Rice (1996, 143) also warns that some common questions remain unresolved in network-based models:

> In our rush to formulate network models, especially for prepositions, are we describing or inventing? That is to say, does the resulting mental space or lexical network reflect a linguistically relevant catalogue of all available use types both synchronically and diachronically? Or does it reflect the personal and highly subjective categorization of the linguist/model-builder? And, as a proposal about conceptualization, should it not represent some sort of consensus about agreed-upon similarities and distinctions relevant to actual language users?

Rice's last question invokes the claim that our conceptualizations are conventionally based and related to our physical, social and linguistic contexts.

Besides the prototype model, Annette Herskovits (1982, 1986) introduces a theoretical model, known as the "ideal meaning" of prepositions. Herskovits explains the notion in the following way:

> The prepositional meanings that I propose, which I call "ideal" or "core" meanings, have some analogies with prototypes, but are suited to the domain of spatial relations. The core meaning of a preposition is a geometrical "idea", from which all uses of that preposition derive by means of various "adaptations" and shifts. A core meaning is generally a

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[9] Rice (1996) actually uses the term "central reference point" or CenRP, because she considers it to be more neutral (or less "loaded" as she says) than the term prototype. She sides with Langacker's (1991), rather than Lakoff's (1987), view of the network as a taxonomy of node types, where each node "corresponds to what he calls 'established senses' which are all connected by arcs indicating the particular categorizing relationship which links the sense to other senses represented in the network" (Rice 1996, 140).

relation between two or three "ideal" geometric objects (points, lines, surfaces, volumes, vectors, etc.). Such objects are mapped onto real objects by some process of idealization, or **geometric imagination**. (Herskovits 1982, 69)

The difference between the ideal meaning and the prototype model is that an ideal or core meaning is a geometric "idea", i.e. a geometric relation of two or three schematic geometric objects. The "idea" carries the fundamental meaning of the preposition, and all its other meanings form from this: it is unique to every spatial preposition. On the other hand, a prototype is the central concept of a category, and can also be a member of another category with a different central concept. That means that it forms its category according to any concept, including that of an ideal or core meaning of a preposition.

The meaning that will be used here is the "ideal" or "core" meaning of spatial prepositions, and it will be treated as the prototypical concept of its own category. All the other meanings are members of the category located in the inner and outer circles of the radial category. Their exact location is not important to this study, and will therefore not be specified.

As speakers, we conceptualize objects in our spatial environment and assign them an orientation, either according to our point of view, or in relation to other objects. Vandeloise (1984) called these two types of orientation "intrinsic" and "contextual" respectively, while Lang (1989) distinguished between "inherently oriented" and "canonically oriented" objects. Langacker (1987, 123), on the other hand, subsumes the two notions under the general terms "viewpoint" or "vantage point" ("the position from which a scene is viewed") and "orientation", which "pertains to alignment with respect to the axes of the visual field". The latter can be further subdivided into canonical or actual orientation. It is important to note that both Vandeloise (1984) and Lang (1989) subscribe to the so-called "two-level approach", which looks at "how linguistic structures are determined by the orientation of objects and by the speaker's line of sight," while Cognitive Grammar

explains by cognitive, biological and pragmatic principles how the speaker attributes a certain salience, relevance and typicality to the objects and their parts which belong to a given scene, and how in accordance with this attribution the objects participate in certain relations (Zelinsky-Wibbelt 1993, 8).

A highly simplified version of the conventional representation of an object is a schematic geometric object or image schema (cf. Talmy 1983,

Lakoff 1987) (see 1.3.). Image schemas are easily projectable to real-life objects, with emphasis on the distinctive field the geometric "idea" is based on. For example, a closet has three fixed sides, and one door, which can be opened by swinging or sliding. It often stands on four legs, and its top panel is lower than the ceiling. It has shelves, drawers, and a rod from which to hang clothes. Yet the very concept of a thing being contained within the sides of the closet is far more important than all the details that characterize it. The container schema schematized as a quadrant can be projected onto this closet, and onto any other, such as a body, a box, or the sea. This process is called the "process of idealization" or "geometric imagination" (Herskovits 1982, 1986). However, as Aurnague and Vieu (1993) point out, only the purely objective positional and directional properties of spatial markers are represented at this geometrical level[10]. Therefore, they propose a three-fold model for the interpretation of the meaning of spatial markers, which involves

> the geometrical properties of the entities and the geometrical relations […] the functional properties and relations [and] the pragmatic principles together with a representation of (some) world knowledge and (part of) the context (Aurnague and Vieu 1993, 397).

These three parts are interconnected:

> The geometrical level is at the root of this system. It constitutes a formal structure where we represent the objective, purely spatial data present in the text analysed. […] The functional level is of course based on the geometrical level, since the spatial properties are part of the properties of the entities, and many functional relations imply geometrical ones (e.g., containment implies inclusion in the interior) […] The specific knowledge that the pragmatic level embodies is procedural: either it works as a filter, […] or it produces defeasible information (Aurnague and Vieu 1993, 397, 400).

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[10] Positional (static or topological) relations express a position of one entity in relation to another, while directional (dynamic or projective) relations express a motion or orientation of one entity towards another (Zelinsky-Wibbelt 1993, 7). The prepositions *in*, *on* and *at* are thus positional, because they relate one entity to the interior, the upper surface, or the exterior of another entity respectively, while *into*, *out of* and *from* are directional, because they express motion into or out of a container, or away from something respectively. Tenbrink (2007, 119) classifies *in*, *on* and *at* as *topological* and *non-dimensional*, reserving the term *dimensional* for all syntactic forms that "are used to express relative location on the spatial dimensions or axes."

The functional level is crucial to the pragmatic one, because the concept of typicality (and relevance) necessarily relies on the function of objects, especially when several possible relations compete. Aurnague and Vieu (1993, 434) illustrate this point using a bowl turned upside-down over an apple, where the prepositions *in* and *under* compete to describe the situation. *Under* would be chosen over *in*, because the bowl and the apple are not in a situation typically described using the preposition *in*. This proves that containment is not a necessary condition for the use of *in*, but it does make it more relevant. In the same vein, Coventry and Garrod (2004, 52) argue for a functional geometric framework, "which combines both geometric and extra-geometric constraints to establish the situation-specific meaning of spatial expressions." When speaking of *in* and *on*, Coventry and Garrod (2004) propose two components in the meaning of both these terms: a functional component of "location control," and a geometrical component of "enclosure," where enclosure affords location control (for instance, if coffee is *in a mug*, when the mug is moved, the coffee moves with it). In other words,

> the cases of *in* and *on* illustrate how the two components, the functional and the geometric, combine to define a functional geometric relation. In these cases, the geometric constraints of enclosure and contact with a surface are directly associated with varying degrees of location control (Coventry and Garrod 2004, 53).

It is therefore quite clear that in order to use and understand spatial language we need not only our knowledge of the geometrical properties of entities, but also our world knowledge about the typical situations in which they are found. These two types of knowledge, along with our physical experience, directly influence our conceptualization of space.

Before we discuss this matter further, we shall briefly present the notion of image schemas, which is crucial to our analysis.

1.3. Image schemas

The field of image schemas was started by Talmy (1983), and continued by Johnson (1987), Lakoff (1987), and others. Talmy introduced the notion of mapping between geometrically idealized or "schematized" representations of objects and their corresponding regions. These objects, therefore, contain a few vague details, but are generally recognizable for their distinct geometric features (Talmy 1983). The schemas themselves are relatively abstract sketches that organize perceivable entities relevant to the represented concept (Lakoff 1987, 453). More loosely, they are a

recognizable visual explanation of individual spatial relations, or as Talmy (1983, 225) puts it,

> [a] process that involves the systematic selection of certain aspects of a referent scene to represent the whole while disregarding the remaining aspects.

Image schemas depict various relations between items distributed in space, and these relations may be profiled differently with respect to the part of the domain covered by the relational predicate. In other words, speakers may single out different aspects of the same scene to give them special prominence by mentally moving them to the foreground, leaving other aspects in the background. This idea first appeared under the tenets of *Gestalt* psychology in the early 20th century (cf. Rubin 1915, Wertheimer 1923, Köhler 1929, and Koffka 1935) under the terms of "figure" and "ground". Cognitive Grammar follows the tracks of *Gestalt* psychology in its interpretation of the mental organization of different scenes. Langacker (1987) thus considers figure/ground organization to be a fundamental feature of cognitive functioning, which is important for semantic and grammatical structure as well. He defines the two terms as follows:

> The **figure** within a scene is a substructure perceived as "standing out" from the remainder (the **ground**) and accorded special prominence as the pivotal entity around which the scene is organized and for which it provides a setting. Figure/ground organization is not in general automatically determined for a given scene; it is normally possible to structure the same scene with alternate choices of figure. However, various factors do contribute to the naturalness and likelihood of a particular choice. (Langacker 1987, 120)

Aside from Figure and Reference (the latter of which is Talmy's term for "ground"), Talmy (1983) distinguishes two more terms that are involved in conceptualization: Path (a particular sequence of places passed), and Manner of Motion. Lakoff (1987), in turn, systemized that conceptualization into Trajectory (TR), an object that moves or does not move, and Landmark (LM), the object in reference to which TR moves or not, leaving Manner of Motion and Path irrelevant. While for some spatial expressions the former four are of great importance, the expressions in this research are not sensitive to Path and Manner of Motion. Therefore, this study will use Lakoff's (1987) terminology for practical reasons.

Some objects are more likely to be LMs, and some TRs. For instance, LMs are usually big stationary objects that hold some kind of significance

to society (Talmy 1983, 11). They might be, for example, buildings, statues, a pavilion in a park, or an entity familiar to two individuals. A TR is an entity that is usually smaller than a LM, and is typically mobile. Good examples are humans and animals, but TRs can also be inanimate objects that move, like a ball or a book. The latter need a force to make them move, which can be provided by, for example, a human or a river, or similar.

Aside from LM and TR, there is one more item that helps speakers to conceptualize. A region is the place where a TR is located "relative to a landmark" (Radden and Dirven 2007, 305), i.e. the part of the LM that we usually interact with (see also 4.2. for the notion of search domain). A common region of a closet is its interior, and the region of a table is its upper surface.

The image schemas used in this study are containment, support and adjacency (see 2.1., 2.2., and 2.3.), which are only a few in a long and varied list of possible relations depicted by image schemas. The former two, i.e. image schemas of containment and support, are considered conventional due to frequency of encounter. The adjacency image schema, however, has only recently been recognized as a variation of an existing conventional schema depicting proximity. We discuss in more detail each of these schemas in Chapter Three.

1.4. Conceptualization of space

The relation of space and language is very intricate and difficult to describe. Space is, by its nature, in an extremely slow but constant state of change, yet its reference points are always present to help define it. Conversely, language is a system that, among other things, describes space, developing under the influence of tradition, which induces change according to usage, contemporary trends, class, and other social factors. These social factors create irregularities, and cause some expressions to become obsolete or disappear from usage.

As well as space and language, the issue of conceptualization further complicates the relation. Our conceptualization is based on our physical experience in a spatial environment. In other words,

> Our concepts are structured, both internally and relative to one another. That structuring permits us to reason, to comprehend, to acquire knowledge, and to communicate […] But structure alone does not make for meaningfulness. […] Experientialism claims that conceptual structure is meaningful because it is *embodied*, that is, it arises from, and is tied to, our preconceptual bodily experiences (Lakoff 1987, 267).

This approach starts primarily from the question of how conceptualization determines linguistic expressions, while simultaneously being constrained by the speaker's environment, perspective and purposes (cf. Zelinsky-Wibbelt 1993, 8). The amount of information that we get from our physical and non-physical environments is so vast that "understanding and communication only become possible via the schematic, relatively simple structure imposed [on this information] by spatial concepts" (Zelinsky-Wibbelt 1993, 5).

Similarly, Tyler and Evans (2003, 52) propose the term "proto-scene" and define it as follows:

> A proto-scene is an idealized mental representation across the recurring spatial scenes associated with a particular spatial particle; hence it is an abstraction across many similar spatial scenes. It combines idealized elements of real-world experience (objects in the guise of TRs and LMs) and a conceptual relation (a conceptualization of a particular configuration between the objects).

Lakoff (1987, 267), however, also identifies the two major problems arising from the claim that our conceptual structure is formed from our preconceptual one: 1) the assumption that our physical, bodily experience itself has structure, and determining the nature of that structure; and 2) given that not all our concepts are physical in nature, how can an abstract concept be based on bodily experience?

Like Johnson (1987), Lakoff (1987, 267) offers a solution to these problems by proposing that "there are at least two kinds of structure in our preconceptual experiences": basic-level structure with basic-level categories, and kinesthetic image-schematic structure, with image schemas that "constantly recur in our everyday bodily experience". As for abstract conceptual structures, Johnson and Lakoff consider them to be indirectly meaningful, i.e. "understood because of their systematic relationship to directly meaningful structures" (Lakoff 2000, 268).

Tyler and Evans (2003, ix) stress that particular spatial relations have important consequences that are meaningful to humans, and give rise to a range of non-spatial meanings. They provide the following example:

> Sentences such as: *You can count on my vote* and *She is in graduate school* do not strictly involve spatial relations between physical entities, but rather non-physical concepts associated with the notions of support and containment respectively. Spatial particles offer rich and fascinating evidence of the complex interaction between spatio-physical experience, the human conceptual system and language use.

Still, the question of how to describe the relation between space and language remains complex, and is far from being resolved. One early attempt to do so was made by Benjamin Whorf, who said that language is a product of the "mass mind," developed slowly through time under the influence of inventions and innovations (Whorf 1941a [1939]). By "mass mind," Whorf implied cultural and social factors, which he believed shaped language. This relation is put in the context of an individual, whose conceptualization is formed in accordance with the mass mind. The latter would, therefore, govern the individual's conceptualization, as influenced by internal inventions and innovations, with habit as the key driving force. In other words, language convention is a type of habit—a social consensus on mental representations, denoted by the elements of a language.

The mass mind and conceptualization are tightly connected; in fact, in the researchers' opinion, conceptualization is part of the mass mind. It can be placed between space and language, since it perceives space and uses language to express this perception (see Figure 5). Further, language change appears due to a shift in conceptualization within the mass mind, making the two a crucial part of the stated chain. Yet neither the mass mind nor language can change space: they only change the conceptualization of it. This is why it can be said that space shapes language through the speakers' conceptualization of space. The research herein will use this idea of conceptualization as its guiding idea.
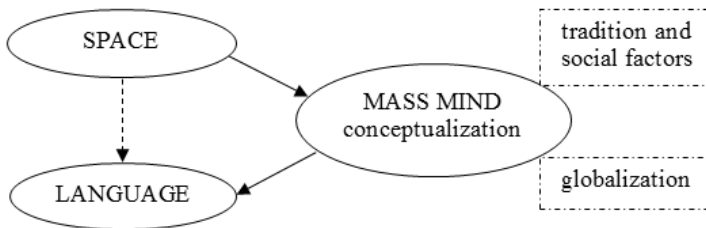

Figure 5. The relation of space, mass mind, and language

As an addition to the concept described in Figure 5, Whorf claimed that a human's conceptualization is shaped by language, i.e. that linguistic categories influence our perception and cognition—a postulate better known as the principle of *linguistic relativity*, or the Sapir–Whorf

Hypothesis.[11] While Sapir devoted his attention to the nature of the language system (which he saw as dual, consisting of code and representation), Whorf focused on how grammatical categories of specific languages related to conceptual and behavioral patterns:

> Languages have grammars, which are assumed to be merely norms of conventional and social correctness, but the use of language is supposed to be guided not so much by them as by correct, rational, or intelligent thinking. (Whorf 1940a, 229)

He defined the principle of linguistic relativity as follows:

> The phenomena of language are background phenomena, of which the talkers are unaware or, at the most, very dimly aware […] These automatic, involuntary patterns of language are not the same for all men but are specific for each language and constitute the formalized side of the language, or its "grammar"—a term that includes much more than the grammar we learned in the textbooks of our school days. From this fact proceeds what I have called the "linguistic relativity principle," which means, in informal terms, that users of markedly different grammars are pointed by their grammars toward different types of observations and different evaluations of externally similar acts of observation, and hence are not equivalent as observers but must arrive at somewhat different views of the world (Whorf 1940b, 61).

We have to keep in mind, though, that Whorf was addressing an audience of scientists and readers of the MIT *Technology Review*, and warning them that

> the habituated thinking cultivated in a monolingual English environment could turn their coveted scientific objectivity into an English-centric subjectivity (Bąk 2016, 9).

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[11] Neither Sapir nor Whorf ever stated the principle in the form of a hypothesis. In fact, Roger Brown and Eric Lenneberg, who were among the first to conduct an empirical test of the linguistic relativity principle in 1954, considered the idea to be Whorf's alone. In Bąk's (2016, 10) opinion, the term "Sapir–Whorf Hypothesis" was coined because "in true relativistic fashion the idea needed to be named to be fixed in the academic mass mind." However, it was Carroll's (1956) introduction to his collection of Benjamin Whorf's selected works that gave the latter's work a deterministic interpretation. This publication was to become a leading source for researching the Sapir–Whorf Hypothesis.