Slavistische Beiträge · Band 237

(eBook - Digi20-Retro)

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Spatial Cognition and the Semantics of Prepositions in English, Polish and Russian

Verlag Otto Sagner München · Berlin · Washington D.C.

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SLAVISTISCHE BEITRÄGE

BEGRÜNDET VON

ALOIS SCHMAUS

HERAUSGEGEBEN VON

HEINRICH KUNSTMANN

PETER REHDER · JOSEF SCHRENK

REDAKTION

PETER REHDER

Band 237

VERLAG OTTO SAGNER
MÜNCHEN

ALAN J. CIENKI

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VERLAG OTTO SAGNER · MÜNCHEN
1989

ISBN 3-87690-421-8

Preface and Acknowledgments

"Some say that knowledge is something that you never have.
Some say that knowledge is something sitting in your lap.

I must admit,
Just when I think I'm king,
Just when I think everything's goin' great,
... I just begin."

-- Kate Bush, "Sat in Your Lap"

This work represents a somewhat revised version of the doctoral dissertation I completed in the Department of Slavic Languages at Brown University in May, 1988. I chose the topic for my dissertation at a point when I had studied both Russian and Polish for a number of years. In many cases, as students of Slavic languages know, knowledge of one Slavic language can be very helpful in learning a second one. Other times, however, the apparently arbitrary differences in the usage of constructions that seem so similar in the two languages can be very frustrating. A case in point is the use of cognate prepositions in the different Slavic languages. I decided to study the semantics of certain prepositions to see if there is any way to discern whether the differences are principled in any way, or whether they are in fact arbitrary. If the cognate prepositions do still have the same meanings, why do such differences in usage arise in the different Slavic languages?

This led me to also study the use of prepositions in English which serve as translation equivalents of those in Slavic, and to question how we select one preposition over another in a given context: When does one say a duck is in or on the water? After realizing that the physical situation in the real world alone does not provide the answer to this question, I was relieved to come across the cognitive approach to semantics in the book *Semantics and Cognition* (Jackendoff: 1983). This changed the theoretical approach of my dissertation. The exposition of my analysis was also influenced to a large degree by Herskovits (1982, 1986). With the current blossoming of cognitive semantics, it seems new works on the topic are appearing at an overwhelming pace. Some that

were published at a time when I was already well into my study (such as Lakoff: 1987 and Johnson: 1987) would surely have had a more profound effect on my method of analysis had I been writing the dissertation at a later date.

It is my pleasure to acknowledge those who have helped be bring this work to its present form. My dissertation committee, consisting of Henry Kučera (my adviser), Robert Mathiesen, and Victor Terras (one of my first teachers of Polish), provided many helpful comments on an earlier draft. I profited from discussions with Adam Weinsberg of Warsaw Univ. early in my research, with Ray Jackendoff as I began to develop my analysis, and I gained a great deal of theoretical insight in a seminar on recent semantic theory conducted by Cynthia Welsh in the spring of 1988 at Brown.

I am indebted to my native informants in the three languages under study, among them: Anna Dreger-Młodożeniec, Bożena Mądra-Shallcross, Irina Mirsky-Zayas, Vlad Zayas, Ewa Gorska, Valeria Sajez, Nancy Smith, Alana Thorpe, and Paul Tolbert. I would like to thank Barbara Dooley for her moral support, especially as I undertook the task of writing while in Berlin; John Caemmerer for developing the font for Slavic languages with Latin alphabets; Frank McLellan for use of the graphics software; Ginny Gallogly for her constant help; Nancy Smith for proofreading the entire manuscript; and all of my grad student-friends in the Brown Slavic Department for their encouragement, which sustained me throughout my final year of thesis writing.

The research for the dissertation was supported in part by a combined grant from the International Research and Exchanges Board (IREX) and the U.S. Dept. of Education Fulbright Hays Program for study in Warsaw, Poland in 1985-86. The work was further supported by a grant from the German Academic Exchange Service (DAAD) to study at the Osteuropa-Institut of the Freie Universität Berlin (West Berlin) in 1986-87. Completion of the written work was supported by a Dissertation Fellowship from the Joint Committee on Soviet Studies of the Social Science Research Council and the American Council of Learned Societies with funds provided by the U.S. Department of State.

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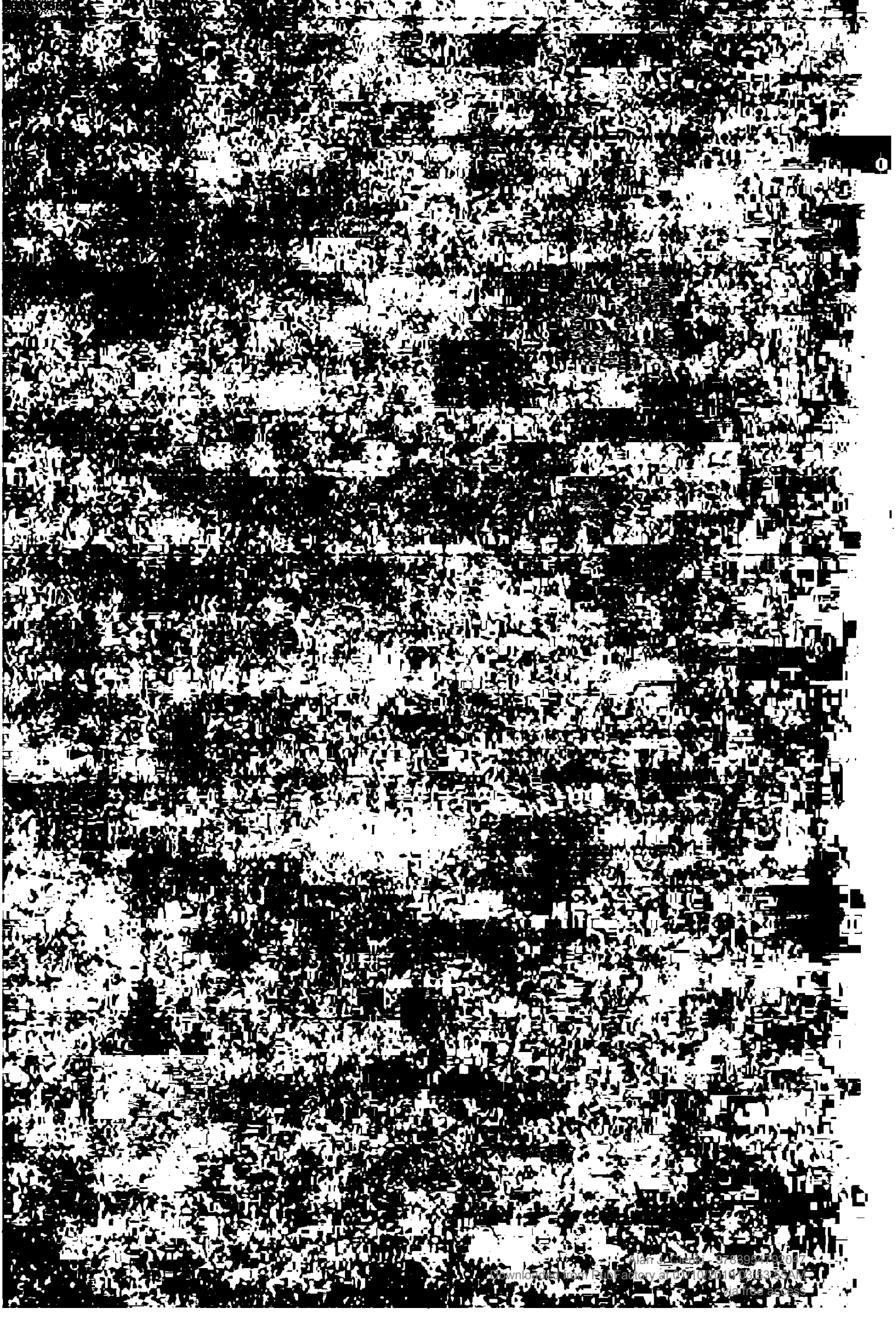


Chapter 1
Introduction

1.1 Preliminaries

1.1.1 *The data*

The object of study in this work will be a selected group of prepositions in English, Polish, and Russian which can express spatial relationships. The group consists basically of the following:

English on/onto, in/into, at, to, toward(s);
Polish na • Locative case (L) or Accusative case (Acc),
w • L/Acc, przy • L, u • Genitive case (G), do • G,
ku • Dative case (D); and
Russian na • L/Acc, v • L/Acc, u • G, do • G, k • D.

The simplest type of prepositional spatial expression (Herskovits: 1986, 7) is composed of three constituents: the preposition and two noun phrases, as in

the book on the table.

The two noun phrases are given various names in other studies in reference to their semantic roles in spatial expressions such as theme and reference object (Gruber: 1965), or located entity and reference entity (Herskovits: 1986). Here the first noun phrase will be referred to as the Spatial Entity being localized (SpE), and the second noun phrase as the Localizer (L-r). (This terminology stems from Weinsberg: 1973.) The spatial prepositions to be studied will usually be cited in expressions of this type as examples, but as Herskovits (1986, 7) points out, locative expressions may also be structured around a copulative verb

The book is on the table.

or an existential quantifier

There is a book on the table.

The SpE may, in fact, refer not only to objects, but also to events, states, or actions expressed by the sentence, and thus may consist of a clause rather than just a noun phrase:

We were living in Berlin.: Polish Mieszkaliśmy w Berlinie.: Russian My žili v Berline.
└─SpE─┘ └L-r┘ └─SpE─┘ └L-r┘ └SpE┘ └L-r┘

This study focuses on spatial expressions as they are used in Modern Standard Polish, Russian, and Northeast American English. The three languages will be abbreviated in this study as P, R, and Eng respectively. Occasional reference will be made to colloquial language and to British English when usage in these idioms is different. The examples, for the most part, are representative of "everyday" standard usage of the languages, rather than of the sometimes "extraordinary" usage found in examples taken from works of literature. Examples are cited from previous studies, grammars, dictionaries of the languages, and daily usage. In the instances in which I translated an example into Polish or Russian, the translation was checked by several native speakers of the target language.

1.1.2 *The scope of the study*

As mentioned above, this study focuses on "everyday" usage of the languages in question. This means usage as it relates to what Jurkowski (1975) calls the "earthly macrocosm": the space most people use in their daily interactions on Earth. In this space, forces like gravity are assumed as the norm. (Section 2.3.1 on "World knowledge" elaborates on these assumptions.) It is the space in reference to which our languages developed, as opposed to the greater "megaworld" of the universe or the microworld of the atom and elementary particles. These latter worlds, in which the relations between objects are subject to other physical laws, will not be treated here.

Four modes of spatial behavior may be distinguished: Locative, Adlative, Abla-

tive, and Perlative. The terminology comes from Weinsberg (1973), though he defines the terms somewhat differently. Locative (Loc) behavior simply refers to the SpE's Location; it means that the SpE is in the Place identified (here) by the prepositional Place-function (e.g. The book is on the table.). I will use the expression "Locative" (with a capital "L") to refer to prepositions of this type, as opposed to "locative prepositions" (small "l") which will be synonymous with "spatial prepositions"[1] in general.

The three remaining modes may be referred to collectively as Lative spatial behavior, and may be specified as follows. In Adlative (Adl) spatial behavior, the motion involved leads to a decrease in the distance of the SpE from the L-r (e.g. The swimmer dove into the pool.). In Ablative (Abl) spatial behavior, the motion leads to an increase in the distance of the SpE from the L-r (e.g. Some loose change fell out of my pocket.). In Perlative (Perl) spatial behavior, the motion involves the displacement of the SpE within the Place of L-r.(e.g. We walked through the forest.). The four modes of spatial behavior will be discussed further in section 4.1.1.

The scope of this study will be limited to a selected group of Loc and Adl prepositions in English, Polish, and Russian which are often considered translation equivalents across the three languages (e.g. Eng in, P w • L, and R v • L). The Loc prepositions will be handled in Chapter 3 under Place-functions, and the Adl prepositions in Chapter 4 under Path-functions. The intent of this limitation is to allow for adequate discussion of the data with sufficient linguistic evidence in the form of examples translated into the three languages, and to treat both prepositions of Location and some of their motional counterparts, yet all within a work of reasonable length. One realm of this study, then, is the examination of translation equivalents, which, as will be seen, are not used as consistently across the three languages as might be expected. Another realm of this work is theoretical. This case study will explore the applicability of an approach to

[1] Also, recall from section 1.1.1 that the surface locative or prepositional case in Polish and Russian will be abbreviated just as L, e.g. the prepositions w • L, na • L, etc.

semantic analysis called "Conceptual Semantics" in an attempt to discover why the usage of "translation equivalent" prepositions differs the way it does from language to language.

1.2 Trends of previous semantic studies of spatial prepositions

> "People seem never to have taken prepositions seriously."
> --Ray Jackendoff (1973)

Though some have found the dearth of syntactic studies of prepositions lamentable, spatial prepositions have been favored by numerous linguists as an object of semantic study. This can be attributed to the concrete nature of the referent situations involved: the domain of study concerns (for the most part) concrete objects and physical notions which can be traced to geometry (three-dimensional space, surfaces, distance, etc.) and topology (contiguity, inclusion, etc.). The concrete nature of the referents makes it easier to show the validity of one's semantic theory than if one uses a more abstract domain for analysis, such as emotions, for example. The following is an overview of the various approaches to this topic that I have investigated which deal with either Russian, Polish, or English. The preponderance of studies relating to English prepositions is a reflection of the sparsity of material published on the Slavic languages in this area.

1.2.1 *Descriptivist approach*

It has been common in previous works on the topic to employ a descriptivist approach in which the author provides an encyclopedic accounting of the many different senses that the prepositions can have in different contexts. This encyclopedic approach is typified in the works of Lindkvist for English, Klebanowska for Polish, and Vsevolodova for Russian.

Lindkvist (1950, 1972, 1976, 1978), in his several works on spatial prepositions in English, takes a detailed descriptivist approach. He is considered a pioneer in the field

for collecting a great volume of material which allows for comparison of the differences in usage between various prepositions. He leaves no stone unturned, considering all imaginable uses, and the result is the compilation of a huge amount of "raw material," with examples from a plethora of literary sources. His works are of value, among other reasons, not only for their discussion of the Locative prepositions, but for what will be called here the Lative equivalents of these prepositions as well.

Klebanowska's work (1971) represents the first time that such a large portion of the locative system in Polish has been examined in such detail, even if her study is limited specifically to prepositions in the Locative role. She ascribes several distinct meanings to each preposition. These are listed as either primary or secondary meanings, the latter being considered contextual variants of other prepositions. The large number of meanings she gives, which are actually more like specifications of contexts in which the prepositions can be used, can certainly be attributed in part to the amount of pragmatic information that she includes in the meanings. She gives, for example, three meanings for na: 1) the localized object remains in contact with the exterior surface of the localizer which prevents it from falling; 2) the localized object is located on the outer side (further from the support) of the L-r; 3) the object localized occupies part of the space defined by the localizer (variant of w).

Vsevolodova (1982), addressing her work to teachers of Russian and philologists, also takes a descriptivist approach, and like the two authors above, provides a wealth of examples of the usages of each preposition. Vsevolodova also goes one step further in that she systematizes her material to some degree by organizing the prepositions she discusses into a hierarchy according to certain aspects of their meaning. This hierarchy in turn determines the way in which the prepositions are grouped and ordered in the presentation, and encompasses factors such as whether the preposition indicates static versus dynamic location, the relation of the motion to the space localized (e.g., ablative or adlative motion, which she calls "start" and "finish" respectively), and rela-

tion to the front/back or top/bottom of the located area. The book also considers the phraseology of prefixed verbs of motion with prepositional phrases. The work is, however, not so much a semantic analysis but rather, as the title indicates, a detailed overview of the "means of expressing spatial relations in modern Russian" which focuses on prepositions.

1.2.2 *Markedness analysis*

While the studies mentioned above bring together vast amounts of data and are useful reference works for the non-native speakers of each language, they do not go far beyond the stage of compiling the material, and so provide little in the way of deeper linguistic insight. A different, more theoretically based trend followed in other semantic analyses has been to apply the structuralist principle of markedness, a theory which has received wide application in the study of phonology. Applying it to semantics, linguists have claimed that each preposition is either positively or negatively marked, or simply unmarked, for certain designated components of meaning.

Hjelmslev (1935) was an early proponent of this theory through his study of the case systems of several languages. As a structuralist, he explores the hypothesis that the meaning of a surface case in a language depends on what other cases the language distinguishes. As a localist, he considers cases and prepositions as primarily spatial in meaning, with temporal and other abstract meanings as derived in some way from the spatial meaning. He devises a system of description based on a few, very abstract "primitives" (direction, coherence-incoherence, subjectivity-objectivity), but proposes no objective test to determine or disprove the validity of the terms used in his analysis. Van Schooneveld (1978) carries on the structuralist tradition in his study of the Russian case system and 16 spatial prepositions. Following Jakobson (1936) he assigns the cases and prepositions separate meanings (employing the features of "dimensionality", "duplication", "extension", "restrictedness", and "objectiveness"). But again, a question

remains with such theories which seek to pinpoint word meanings in terms of abstract primitives that are treated as theoretical "givens": how does one corroborate and verify the conclusions that are drawn? As a review by Sussex (1980) points out, so as not to be empty, such studies need to show that a large quantity of data is handled consistently and insightfully by the proposed semantic analysis and that other alternatives do not do as well. But as Janda (1986, 30) observes, "The gap between van Schooneveld's theoretical system of meaning and the meaning of actual examples...can be bridged only by a straining leap of both the intellect and the imagination." The above-mentioned studies also expound the structuralist principle of form-meaning isomorphy, that one linguistic form can have only one meaning. Kučera (1984) however has pointed out some aspects of the untenability of this principle of "invariance" in semantic analysis as well as the inability to test the markedness hypothesis in complex cases. For example, when a linguistic form is claimed to be marked for more than two features, entailment tests are impossible since such tests can only encompass two terms.

Weinsberg (1973) on the other hand, takes a different approach in his comparative structuralist presentation of the spatial systems of Polish, German, and Romanian, and allows more than one meaning for certain prepositions. He employs componential analysis, the idea that the meaning of a word can be broken down into units or components, and devises a hierarchy of semantic features for the spatial prepositions. The prepositions are either marked +, 0, or - for these features which form networks of oppositions within each language system. The meanings of the prepositions are seen as the product of the several oppositions they enter. Weinsberg differentiates three categories of possible oppositions, each of which pervades the oppositions of the other categories: neighborhood (the relationship of location between the area localized and the localizer), spatial behavior (what I refer to in this work as Locative and Latives), and detailed arrangement (concerned with things like the chaotic arrangement of the localized area expressed by Polish po + L as in po domach). The tree diagrams of net-

works of oppositions that Weinsberg uses uncover the configurations of oppositions, as well as the gaps, within each language system, "showing their properties in the same way as the view of topographical features of land is revealed to the observer surveying it from a plane" (Sysak-Bonońska: 1982, 9). The tree diagrams also allow for an easy comparison of the differences in the particular spatial features that the prepositions in each language distinguish. Weinsberg's analysis is, in fact, one of the most extensive comparative studies published on static and dynamic spatial relationships. His method has also been adapted to a comparative analysis of spatial prepositions in Polish and Russian by Cienki (1987).

Among others who have applied the theory of markedness in semantic studies are Reiter and Watts. Reiter (1975) is concerned specifically with the prepositions of location in German and Russian. His work is not focused on defining concrete meanings for the prepositions, but rather on an analysis of the elements of meaning that the prepositions entail, drawing on methods from mathematics and symbolic logic. His study is useful for the extensive historical background it provides on the prepositions and their usage, extending back to common Indo-European roots, and for systematically comparing contemporary translation equivalents of the Russian prepositions in German and vice versa. The method of analysis itself, however, is so highly arcane as to render it virtually inapplicable by anyone other than the author himself. For example, Reiter analyzes Russian na as "z_1Ra," where z's are numbered elements, R represents a relation, the function of which is defined according to circumstances, and "a" is the "function bearer". What exactly the "function" is here remains unclear.

Watts (1976) stays very close to the model of markedness from phonology in his semantic study of Locative and Lative prepositions in English, German, and the Swiss German of Zurich. Watts tried to address the problem of arbitrariness in the selection of semantic features by employing a classification test for the prepositions as follows. The author first selected a set of likely semantic features for the group of German pre-

positions under consideration based on intuition. To test these chosen features against others' intuitions, he first asked native German speaking subjects to group a set of sentences, in which the prepositions were used in various spatial contexts, by similarity. The groupings were counted using a "cluster analysis," and the results displayed in a chart which shows which prepositions were most commonly related together. The subjects were also asked for the reasons behind the groupings they made, and the responses, combined with the author's original intuitions, were used for a final determination of his semantic features. Despite the semi-scientific methodology used, the resulting definitions are abstract and often counterintuitive. The study proposes, for example, four at's with the meanings: [+ locative], [- locative], [+ locative -horizontal surface], and [+ locative + distance -horizontal surface]. In general, there remain serious drawbacks to the application of the theory of markedness to semantics, and I will address these in the following section.

The first detailed study of the spatial uses of prepositions in English, and thus one often cited in semantic studies that followed, is that of Leech (1969). He takes a structuralist approach, but the description of place adverbials that he offers is really intended as an illustration of his own particular semantic theory. Leech focuses on the Locative prepositions and does not consider separate meanings for their dynamic counterparts since he sees the difference as determined by the presence (or absence) of a dynamic context (i.e., a verb of motion). However this allows for a less than adequate accounting for the differences in usage of Locative and Lative prepositions, and I will elaborate on some of these differences in Chapter 4. Leech's theoretical posture is also limited in that the meaning representations he devises often incorrectly predict implications and paraphrasing, even though he explicitly states in his study that this is a pitfall that a semantic theory must avoid. Herskovits (1982, 42) notes, for example, that his representation of in allows for the implication: if there is a hole in my shoe, and my shoe is in the closet, then there is a hole in the closet. Such difficulties can be attri-

buted to the fact that his is a very "pure" linguistics, separate from knowledge and beliefs about the world.

1.2.3 *Componential analysis*

Componential analysis, mentioned earlier in reference to Weinsberg's study, is a method that has been applied in several works on English prepositions. Bennett's (1975) often-cited work on spatial prepositions in English makes use of componential analysis in conjunction with a form of Fillmore's (1968) case grammar. In his book, Bennett is interested in how well-formed "sememic" (semantic) structures are generated and mapped onto "lexemic" representations (surface structures) within the framework of "stratificational grammar." This includes an accounting of the "realization" processes that turn the semantic representations into sentences. Rather than being interested in exhaustive explanations of the semantics of every preposition, his goal is to characterize the overall semantic structure of space (and time) in English. As a result, his componential representations of prepositional meaning are very "trim". The meaning of at, for example, is given as "locative", on as "locative surface". He considers a relatively large number of prepositions (31), in their Locative and Lative uses as well as in expressions of "extent". To this end he employs five cases: locative, source, goal, path, and extent. Bennett introduces the idea of allowing case phrases to be embedded in other case phrases. This allows him to explain polysemy of the type where a preposition is a member of several subsystems (Loc, Adl, Perl) at the same time.

In her long dissertation of over 600 pages, Jessen (1974) analyzes (among other things) the semantics of a wide range of Locative and Lative prepositions in English. She also explores a notion, that she feels is a prerequisite to notions like "source", "goal", and "path", which she calls "journey". Furthermore, in her work Jessen examines the restrictional properties on the occurrence of spatial and temporal expressions in terms of logical and semantic properties of the sentences in which they occur. She

arrives at a statement of co-occurrence restrictions holding throughout the sentence. Her meanings for prepositions are phrasal in nature with qualifying conditions. For example, for on Jessen gives, "X on Y: X contiguous SURFACE (Y_F) Condition: Y supports X". Her study is most useful for the consideration it gives to the interaction of all the elements of sentences in which spatial expressions occur, discussing verbs, negation, and other factors.

In her thesis on a selected group of prepositions in Polish and English, Sysak-Borońska (1980) makes good use of componential analysis in order to contrast the semantics of the two languages. She is most concerned with identifying the focal spatial meanings of the prepositions examined, recognizing that they may have broader total denotations, and she tries to limit the meanings to the smallest number possible (in contrast to previous studies on Polish, such as Klebanowska's and Weinsberg's). Sysak-Borońska synthesizes several previous key studies on Polish and English Locative prepositions, and her work is very interesting for the extensive examples she cites and the explicit comparison she makes between usage in Polish and English. Her definitions were inspired by (but are not always identical to those of) Jessen. For example, for both "A on B" and "A na B" she gives "A contiguous SURFACE (B_F) where necessary (A supported by B)". The conclusions Sysak-Borońska draws are also strengthened by the fact that she supports them with relevant evidence from studies on child language acquisition. Unfortunately her study is limited to only three prepositions in English and four in Polish, the prepositions of direct location. As Talmy (1983, 225) has observed, studies such as those described above have laid a groundwork by isolating many of the basic geometric and dimensional distinctions that languages mark, but as I have mentioned, the target language of these studies has, more often than not, been English.

1.2.4 *Cognitive approach*

The thesis by Sysak-Borońska is one of several studies that have made meaningful connections to several branches of cognitive science. This approach, in fact, suggests itself as the most promising for semantics in that it lends deeper significance to the results of the analysis; research in other areas of cognitive science can serve as a means of verifying or denying the validity of analyses of meaning, as a kind of checks and balances system. This would help avoid the arbitrariness in the identification of supposedly universal semantic features that has plagued many studies in the past. Clark's (1973) study of dimensional adjectives and projective prepositions in English is one often cited as an exemplary work in psycholinguistics. Clark is not concerned with all the variations in the use of the prepositions he considers, but with the definition of the frame of reference used in language (specifically in English), consisting of the directions up, down, right, left, front, and back, and its relation to the "perceptual space" of humans. He also focuses on how children acquire this relation between "linguistic space" and "perceptual space", and provides much useful evidence from studies on child language acquisition.

Herskovits' (1982) dissertation and subsequent book (1986) on the Locative prepositions in English are interesting works for linguists, researchers in artificial intelligence, and psycholinguists. The basic question from which her study arose is: "How can one produce and interpret locative sentences that are appropriate in a given context?". She makes some psychological claims about a level of mental imagery mediating between perceptual knowledge and linguistic expressions (which she discusses as "Geometric Descriptions"), and adopts a "prototype view of word meaning, giving one core definition per preposition. Taking on again as our example, she gives: "for a geometrical construct X to be contiguous with a line or surface Y; if Y is the surface of an object O_Y, and X is the space occupied by another object O_X, for O_Y to support O_X". Herskovits proposes that the core meanings "bend and give", and she describes the

allowable variations as different "Use Types" for each preposition. She also considers the importance of pragmatic factors, such as purpose, relevance, salience, vagueness, and typicality, in the production and interpretation of spatial expressions. The proliferation of Use Types she gives for each preposition can be attributed to her criteria for differentiating the Use Types, which are rather sketchy. She explains some guidelines that she used, such as ambiguity tests, but also says that she did not always follow them if there arose what she judged to be other "significant distinctions" in the use of the prepositions. On the whole, though, her study is excellent and insightful, and points in a promising direction for future semantic analyses; it indicates the insight that the field of artificial intelligence can offer in linguistics, and the kind of claims that can be made in semantics that are concrete enough to be tested for possible psychological reality.

1.3 Insufficiencies of the standard approaches

Many of the studies discussed above[1] assign meanings for the prepositions that consist of simple relations. For example, Leech (1969) assigns in the meaning: in a three dimensional place -- in his terms --> PLA [3 DIME]. As seen in the previous section, these meanings are often qualified by "selection restrictions", that is, preconditions that must be fulfilled for a construction using the preposition to be acceptable (see the example meanings and conditions that Jessen and Sysak-Borońska gave for on). These formulae represent what are supposed to be the necessary and sufficient conditions for sentences using these prepositions to be true. Following Herskovits (1986), I will refer to them as "simple geometric relation meanings", since with few exceptions these meanings all do involve geometric relations. For the most part they correspond in a straightforward way to our first intuitions about the meanings of the

[1] I will cite examples from a few authors here, but in general my comments on simple geometric relations apply to the formulae devised by Leech (1969), Jessen (1974), Bennett (1975), Miller and Johnson-Laird (1976), and Sysak-Borońska (1980).

prepositions considered, and give reasonably good representations for a number of examples.

However, in many cases these meanings lead to wrong or incomplete predictions about what people actually say or understand in given situations. The fundamental problem of encoding and decoding (production and comprehension) remains unsolved with simple geometric meanings. I will first examine some of the insufficiencies of these meanings, many of which were first noted by Herskovits (1982, 1986). Then I will turn to some of the insufficiencies of applying the theory of markedness to semantics.

1.3.1 *Geometric descriptions*

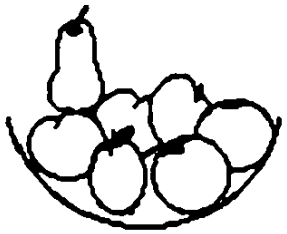
First it should be noted that the simple geometric relations apply in fact not to the objects themselves, but to various geometric figures (points, surfaces, volumes) associated with the objects. Herskovits (1986, 13) notes that in the bird in the tree, the bird is not usually in the "interior" of the reference object (as, say, in the bird in the oven), but in the interior of the outline of a part of the tree, the part made of branches. In the key under the mat, the key is under the lower surface of the mat, but in the fish under the water, the fish is under the upper surface of the water.

With certain prepositions, one "views" an object "as a point" or "as a line"; Leech (1969), Jessen (1974), and Sysak-Borońska (1980) describe this phenomenon of geometric conceptualization. For instance, in the city on the road to London, the road is seen as a line, the city as a point, and the point and line are asserted to be contiguous.

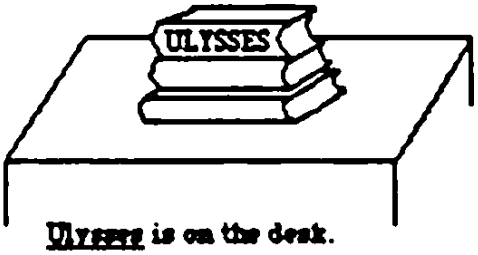
In the following section (Hypotheses...) I will take issue in some detail with the assumption that spatial expressions (and indeed language as a whole) describe physical objects of the "real world". The range of possible geometric descriptions that may be projected onto objects will be explored in the first section of Chapter 2 of this dissertation.

1.3.2 *Divergence from the simple relations*

The simple geometric relations sometimes do not even hold strictly for geometric descriptions. In the figure on the left below, one would say The pear is in the bowl, although the pear is not in the interior of the bowl, and on the right below, *Ulysses* is on the desk, although *Ulysses* is not contiguous with the desk. (The example is from Herskovits: 1986, 14.)



The pear is in the bowl.



Ulysses is on the desk.

1.3.3 *Unexpected dependence on context*

The "deictic" uses of behind, in front of, etc., involve a dependence on context that has been observed in numerous studies in the past (e.g., see Clark, 1973): for instance, to interpret Joe is behind the tree, one must refer to an implicit point of observation in order to determine what the "back" of the tree in that context is.

But Herskovits (1982, 10-11) also observes that there are less obvious cases, such as the examples Lucy is at the playground and Lucy is in the playground. Although both may be true according to the simple relation meanings, we do not use them indiscriminately. "Further analysis will show that at the playground implies a 'remote view', while in the playground implies a 'close-up view'. Thus if both speaker and addressee are in the playground, at the playground cannot be used because a remote viewpoint would be absurd" (Herskovits: 1982, 11).

1.3.4 *Unexplained restrictions*

There are many cases where the simple meanings indicate that some expression should be acceptable, and it is not. For example, although a blackboard covers a certain

area, and part of that area is interior to the rest, one will not say *Draw a line in the blackboard, but rather Draw a line on the blackboard.

Similarly, Herskovits (1986, 16) notes that, in describing the figures below, one will not say *The bulb is under the socket or *The potato is in the bowl, although the situation in (a) conforms to the simple meaning of under, and in (b), the potato is in the space interior to the bowl.

(a) The bulb is in the socket.

(b) The potato is under the bowl.

1.3.5 *Arbitrariness*

Particularly obvious in the analyses which apply the markedness theory to semantics is the disconcerting arbitrariness with which supposedly "universal" semantic features are chosen. In phonetics one can point to such things as data from acoustical studies to support one's choice of phonological features. In semantics it is obviously a more difficult task to produce physical evidence to support an analysis. Weinsberg (1973), for example, posits four different na's for Polish, each marked for different features (supporting, external, confined, and anchored na). Semantic analyses such as this which categorize na in Pies miotał sie na łańcuchu (The dog yanked on the chain) and the na in balon na długim kiju (the balloon on a long stick, i.e. attached to it with a string) as separately as they do na from, say, pod, fail to identify any common core running through different uses of the same preposition (here, na).

1.3.6 *Inability to handle fuzziness in word meanings*

Another problem with applying markedness in semantic analyses is that it requires categorical "yes, no, no judgment" decisions of semantic features. In reality, we do not understand everything in such black and white terms. Rather, as Putnam (1975,

133) observes, "...words in a natural language are not generally 'yes-no': there are things of which the description 'tree' is clearly true and things of which the description 'tree' is clearly false, to be sure, but there are a host of borderine cases."

Consider also judgments of color. If one must either assign the marking +, -, or 0 RED to the meanings of color terms, at what point does one stop assigning + RED in the spectrum as the redness of orange gives way to yellow? This is a general problem of what, in computational terms, may be called digitalization of a continuum (Henry Kučera, personal communication). It seems that at best one could not say more than that each color necessarily bears the semantic feature + COLOR. Beyond that, markedness fails to allow much more that would be satisfactory in such a situation involving "fuzzy" cases of word meanings.

Zadeh's (1965) "fuzzy set theory" offers one approach to the problem. According to this theory, membership in a set is not determined categorically as "yes" or "no", but rather in terms of degree. A typical bird (such as a robin) could be regarded as having a high degree of membership in the category "bird", while a less typical example (such as an ostrich) would have a lower rating. Several problems arise with this view, however, such as the fact that a less typical example of a category is not partly in that category and partly in another. "...[A] penguin is not 71% bird and 29% something else, it just *is* a bird" (Jackendoff: 1983, 116).

Jackendoff (1983, 117) concludes that fuzziness must be recognized as "an inescapable characteristic of the concepts that language expresses"; to be descriptively adequate, a theory of language must not treat fuzziness as a defect in language, but rather as an ubiquitous part of the nature of word meanings.

1.3.7 *What is "normal"?*

Semantic theories relying on markedness or on necessary and sufficient conditions for specifying word meanings confront another problem when dealing with at-

tributes that are subject to discrete exceptions. Consider Jackendoff's (1983, 118) examples: "If it is a necessary part of being human to have two legs or high intelligence, then are one-legged people and imbeciles not human? If having stripes is criterial for tigers, are albino tigers tigers?" To rely on the notion of "normality" in a definition (i.e., a normal tiger has stripes, etc.) still leaves one at a loss as to what to do with exceptional situations.

Resorting to more scientific views of how we identify a tiger or a human is another possible approach: one might try to explicate "human" and "tiger" in terms of conditions on DNA (cf. Putnam: 1975). But as Jackendoff (1982, 118) objects, people had a meaning for "tiger" long before DNA was dreamed of; furthermore, he asks, "How could there be (and why would anyone be tempted to seek) a science explicating what is necessary for something to be an instance of 'pebble' or 'puddle' or 'giggle' or 'snort' or 'cute'?"

1.3.8 *Additional constraints*

Often when a "spatial" preposition is used, it is meant (and normally understood) to indicate more than just the simple relation of location. Other constraints beyond those implied by simple relational meanings or by marking with certain semantic features must be met for a locative construction to be used appropriately. For instance, in many semantic studies at is assigned the simplest meaning of just "location". In the sentence Maggie is at her desk, we picture that Maggie is very close to her desk. But Herskovits (1982, 12) notes that it also implies that Maggie is using her desk; if she was standing with her back to the desk, she would not normally be at her desk. As we will see in the analysis to follow, the functional relation between the two objects related with at plays a role in the applicability of this preposition.

Other constraints often inferred by the hearer, but not implied by the meanings suggested in semantic analyses thus far, concern the expected behavior of objects. If

told There is milk in the bowl, "we will generally assume that the bowl has a more or less horizontal underside, and that the milk fills the bowl up to some horizontal plane,... We do not assume the bowl is overturned with the milk floating somewhere in its interior" (Herskovits, 1982, 13).

1.3.9 *Contextualized senses*

The linguists who take a descriptivist approach in their analyses (Klebanowska, Lindkvist, Vsevolodova) try to handle these constraints by incorporating into their meanings what are really broader pragmatic factors. Rather than pointing out the core meaning that is common to a word's different usages, their meanings reflect the word's many contextual variants. For Polish nad, Klebanowska (1971, 102) lists four "elements of meaning". Among these is, "The object localized is found in the proximity of one of the vertical sides of the localizer, with its front turned to it, e.g., Matka stoi nad walizka." But such definitions do not capture the point that there are many common assumptions made by language users that encompass many different words used in different situations. They are assumptions that are not part of particular word definitions, but are on a "higher level". Bennett (1975, 9) makes an analogy with phonology, saying that defining the meanings of prepositions by giving specific contextualized senses is like defining a phoneme by listing its allophones. The issue will be discussed further in this book in the section "Pragmatics".

1.4 Hypotheses to be considered

1.4.1 *The projected world*

In his book *Semantics and Cognition*, Jackendoff makes a convincing argument for a semantic theory which handles the subtleties of word meanings much more adequately, providing a more satisfactory treatment of the very situations which proved problematic in the other analyses mentioned above. His semantic theory is based on

the importance of understanding what factors the language user perceives rather than the physical facts of a given situation. Jackendoff takes issue with the naive (and widely accepted) idea that the information language conveys is about the real world. He supports his belief with evidence from psychology, particularly from the Gestalt theorists, who showed "the extent to which perception is the result of an interaction between environmental input and active principles in the mind that impose structure on that input" (Jackendoff: 1983, 24). He cites, among others, the following example. The four dots below

. .

. .

are naturally seen as forming a square although there are no linear connections made on the page. Other logically possible linear connections, such as an X, are much less likely to be seen immediately. Furthermore, he notes, the organization of the four dots below into a square is much less apparent, although they are in exactly the same spatial relation.

1.05 John!

Why not?

Examples such as this show that what one sees cannot be solely environmental in origin, since the figures are imbued with organization that is not there in any physical sense and that is not logically necessary. "[T]he world as experienced is unavoidably influenced by the nature of the unconscious processes for organizing environmental input. One cannot perceive the 'real world as it is'" (Jackendoff: 1983, 26). I will follow Jackendoff's terminology and distinguish the source of our environmental input as the **real world**, and the world as experienced as the **projected world**. Since we have conscious access only to the projected world, and we can talk about things only

insofar as they have achieved mental representation through these processes of organization, "*the information conveyed by language must be about the projected world*" (emphasis Jackendoff's: p. 29). He notes that the "naive position" mentioned earlier is explicable as a consequence of our being constituted to treat the projected world as reality.

As Jackendoff makes clear, the distinction between the real world and the projected world is not new. He notes that something much like it appears at least as early as Kant; in fact the medieval grammarians known as the modistae made a similar distinction between *modi essendi*, the various properties that things possess as they exist in the world, and *modi intelligendi*, the qualities of things as apprehended by the mind.[1] It is a distinction that can be traced through many works in psychology, and while other linguists have approached the idea of differentiating between the projected world that language describes and the "real world", they have not made claims that are as far-reaching as Jackendoff's. Several linguists note, for example, that it is not the objects *per se* that are related by spatial expressions. Weinsberg (1973) and Cienki (1987) distinguish the spatial entity being located from the area localized by the spatial expression, and Herskovits (1982) discusses the "place" of the located spatial entity. What is innovative with Jackendoff is his application of the distinction between real and projected world entities in a systematic way to the semantics of natural language.

A semantic theory, then, cannot take the notions of the real world as its starting point. Therefore the meanings I will propose will not consist of a series of truth conditions, as the meanings often do in works on the "philosophy of language" or in semantic theories based on set-theory models (e.g. Barwise and Perry: 1983). Yet, if linguistic information most directly concerns the projected world, and if people can differ in their interpretations of environmental input, how can any two people talk about the

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[1] I am grateful to Robert Mathiesen for this observation.

same things? Jackendoff treats the answer in two parts. First he notes Katz' (1972, 286-287) discussion of the theory that the processes by which we construct the projected world are the same in each of us. Following this theory, each of us inherits a set of processes for constructing a projected world, and the processes are either largely independent of environmental input or are dependent on kinds of environmental input that a human being cannot help encountering. This innateness can account for our ability to understand each other most of the time, and for the fact that we can follow directions given to us, carrying out the actions in the way that the speaker conceived of them taking place. Jackendoff also notes that current psychological research strongly supports the claim that much of the organizing process is in fact innate.

On the other hand, Jackendoff points out that there are also aspects of the projected world whose construction is not fully determined by universals of human heredity or common environment, and that these result in interpersonal or intercultural differences. Different people do have different abilities to understand math, music, or literature, and so sometimes cannot convey certain information to each other because of their different experiences. The theory then grants that language must be subjective, "but the fact that we are all human beings, with similar mental structure, guarantees that in a vast range of useful cases our projections are, for most purposes, compatible" (Jackendoff: 1983, 31).

To distinguish reference to the real world from that of the projected world, I will follow Jackendoff's practice of designating real-world entities without any special marking, and will surround references to projected-world entities by * *. To help understand the distinction between the two, Jackendoff (1983, 32) elicits the following example:

> In the projected world, the counterpart of certain (real) radiation is *light* of various *colors*; the counterpart of certain other radiation is *heat*; and much of electromagnetic radiation (e.g., X-rays) has no projected counterpart at all except as a theoretical construct.

This study, then, will involve compositional analysis as a means of semantic analysis, but the facts of physics will not be the keystone of the proposed lexical primitives.

1.4.2 *Semantic conditions and the Conceptual Structure Hypothesis*

As cited in the previous section, there are many problems with using a system of necessary and sufficient conditions for building a set of semantic primitives, but these arguments do not render the notion of lexical decomposition itself invalid. Rather than employing necessary and sufficient conditions to specify word meanings, Jackendoff argues for (at least) the following three sorts of conditions: necessary, centrality, and typicality conditions. These will be discussed further in this work in the section "Semantic conditions." What I wish to emphasize here is that these conditions will not be presented in this work as arbitrary "givens." Rather, the conditions will be proposed working on the assumption of what Jackendoff (ibid.) calls the Conceptual Structure Hypothesis, namely: "There is a *single* level of mental representation, *conceptual structure*, at which linguistic, sensory, and motor information are compatible." Although there is no logical necessity for the existence of such a unified level, Jackendoff (1983, 17) notes that at worst it is "a plausible idealization; at best, it is a strong unifying hypothesis about the structure of mind." It is from this hypothesis that Jackendoff draws his conclusion in *Semantics and Cognition* that semantic structure *is* conceptual structure.

The innate formation rules for conceptual structure include, among other things, a vocabulary of primitive **conceptual categories** or "semantic parts of speech." Jackendoff (1983) demonstrates that these categories include such entities as Thing (or Object), Event, State, Action, Place, Path, Property, and Amount. These basic categories can be expanded into more complex expressions via formation rules. For example,

PLACE --> [$_{Place}$ PLACE-FUNCTION (THING)]

says that a conceptual constituent of the basic category Place can be expanded into a Place-function plus an argument of the function that is of the category Thing. The Place-functions to be discussed in this work are expressed by the prepositions of Location.

Reference cannot be treated arbitrarily in this theoretical framework; rather, the hypothesis places the constraint on claims about word meanings such that the conditions of meaning proposed should be supportable by evidence from perceptual psychology. Semantic conditions, then, are a psychological as well as a linguistic hypothesis. Jackendoff provides a limited illustration of how some spatial prepositional phrases can be semantically decomposed. But as he says, it remains to be seen whether it is possible to apply this framework on a large scale. The focus of this study will be on testing the applicability of this theoretical framework on a selected group of spatial prepositions in English and what are commonly considered their translation equivalents in Polish and Russian.

This study will purport that the choice of the spatial preposition a speaker of a language uses is most commonly motivated as the result of the appropriate matching between the semantic conditions that the linguistic system provides embodied in the lexicon, and what it is that we perceive. As Fillmore (1983, 315) states, "The linguistic system provides language users with ready made schematizations for dealing conceptually with the spatial arrangements of things in the world." Since language was created by people, the semantic conditions must have arisen based on the conceptualizations which human minds can apply. I will examine the hypothesis that these conceptualizations are rooted in geometric schematizations in the section "Geometric descriptions," and will discuss the matching process under "On comprehension and production." In the section "Pragmatics" I will discuss the importance of pragmatic inferences in the interpretation and formulation of locative constructions.

1.4.3 *Use types*

This work will also examine a situation not dealt with by Jackendoff, namely cases in which the choice of the prepositions involved is not inherently inferable from the semantic conditions combined with the usual pragmatic considerations, but is rather motivated by the conventions of the language. As Talmy (1983) discusses, in certain cases, the culture or language requires a particular way of "looking at" a situation over other possibilities which may seem more logical (to someone coming from another language background, for example). This is sometimes due to historical remnants in the language or to cultural factors.

I will consider the hypothesis that the various use types in which a given preposition can be used actually reflect this mandatory categorization of nouns in each language into specific geometric schematizations rather than entailing (as Herskovits suggests) variations in the meaning of the given preposition. Herskovits poses the question as to whether the distinct use types expressed by a preposition in one language are also expressed by its "equivalent" prepositions in other languages, and proposes that if this is so, it would suggest that similar processes connect the uses. The present study will begin to answer Herskovits' question by examining the correspondence between the use types of prepositions in English and their counterparts in two Slavic languages. In addition, this study will place Herskovits' hypothesis in a form that allows it to be verified more definitively, namely by considering the process that connects the use type of a preposition in one language and its equivalent in another language to be the *same conceptual categorization* of the nouns used with the use types in the two languages.

Chapter 2
The framework

2.1 Geometric descriptions

2.1.1 *Schematization*

In this section I will elaborate on the hypothesis mentioned in the previous section, that the motivation for the use of a spatial expression stems from a geometric schematization of the spatial elements involved. Schematization actually involves two processes (here, adapted from Talmy: 1983, 225): 1) imposing a conceptual framework on a referent scene such that only certain aspects of the scene serve to represent the whole, while 2) disregarding the remaining aspects. Talmy (1983: 258-9) says of the first process, that of "idealization":

> The actual, 'literal' referent of any spatial expression, such as an English preposition, is a particular assemblage of primitive geometric components in the form of an abstract schema. This schema, however, must be conceptually applied to a full, repletely detailed referent. The term idealization will refer to this process of 'application', where a referent spatial entity is conceptually idealized in terms of a schema applied to it.

He notes in addition that this process is likely very similar to Gestalt-psychological functioning (as Jackendoff also claims), "such as [that] operative in the drawing of stick-figures by children" (Talmy: 1983, 259).

As stated, these schemas proposed entail geometric components, and the nature of these components is limited to certain types. Talmy (1983, 234) points out that the catalog of geometric types represented in most languages studied so far does not include

> properties specific to metric spaces (including the Euclidean) such as particular size, length, distance, angle, or contour, as well as more substantive properties like texture, material, or identity. Instead the objects are charac-

> terized almost solely by more qualitative or 'topological' properties such as their type of structural conformation, degree of subdivision ('partiteness'), number of relevant dimensions, boundary conditions, and symmetry vs. distinguishability of parts.

These properties will be examined more specifically below.

The complementary process to idealization may be called "abstraction", and involves ignoring the rest of the spatial element that does not pertain to the schema at hand. Talmy (1983, 261) cites across as an example: in constructions with across, it is of no consequence whether a referent object has side boundaries (to walk across the tennis court) or lacks them (to swim across a river). Equally irrelevant for the use of the preposition is whether the plane is a liquid layer (the river) or a solid surface (the court). The use of across actually just calls for the characterizability of the Localizer as a two-edged plane, and other features of the L-r can be disregarded for this categorization. Magnitude is another factor that is normally abstracted out of spatial expressions; to a large extent, languages distinguish the same spatial characteristics for small objects and distances as for great ones (Talmy: 1983, 263). Talmy (ibid.) notes how in the set of sentences,

The ant crawled across my palm.
The man walked across the field.
The bus drove across the country.

the range of size of a reference object, as well as the corresponding length of the path traveled, are irrelevant to the choice of schema-specifying preposition.

I believe that the geometric descriptions that I am discussing here (and which were also examined by Herskovits: 1982, 1986) are essentially part of what Jackendoff (1983, 31) refers to as "mental information, or conceptual structure, that gives rise to the projected world." I will follow his practice of designating such information with capital letters in the semantic analysis to follow (e.g., PLACE, PATH, INTERIOR, SURFACE). Such conceptual information is not necessarily itself projectable, that is, "seeable". It is thus like Johnson-Laird's "mental models": "its structure represents

information, but this structure need not necessarily possess any immediately 'pictorial' features" (Johnson-Laird: 1984, 234). Taking the geometric description of point apprehensibility as an example, we don't actually *see* the object concerned as a point, but it may nevertheless be conceptualized as such. It is this geometric conceptual structure that motivates the use of a particular preposition; we will see that in cases where something may be conceptualized as a point, the motivation is there for the use of the English preposition at.

The psychological reality needed to justify a particular semantic analysis ultimately consists of how the meaning is stored in the brain. The theory followed in the present analysis is that spatial concepts (and thus the "meanings" of expressions for spatial relationships) are based on schematized relations. Among the recent evidence in support of this approach is an article by Jackendoff (1987b) which shows substantial points of correspondence between the theory of schematization in semantic memory and a recent theory (by D. Marr) on how long term visual memory is mentally encoded in a schematic way.

2.1.2 *Some examples*

Now I will consider some of these geometric descriptive schemas in more detail.

2.1.2.1 *Interior*

Herskovits (1982, 106) points out that "interior" should be defined topologically: "The interior is not the difference between the convex closure of a body and the space occupied by the body itself, since the outer boundary of an object may have concavities which are part of the closure but not of the interior." One often overlooks certain interruptions of the physical boundary separating what is perceived as the interior from the exterior (like the doors and windows of a building or the space between the bars of a cage). For containers, the interior is generally bounded by a plane through the rim: the milk in the bowl; and the interior of a tunnel, for example, is bounded by

two planes through its ends. In some cases the *interior* may be determined by an outline superimposed on the spatial element, for example, around a tree trunk and its branches as in a bird in the tree.

What constitutes the *interior* of something is not necessarily projected in exactly the same way in each language or culture. For example, consider the cases in which the English prepositional exponent of interior, in, does not coincide with usage of the coordinate Polish or Russian prepositional exponent, w/v + L:

He fell asleep in the meadow, but P Zasnął na łące, and R On zasnul na lugu.

We will see under the discussion of "Inclusion in interior" and "Contact with surface" that this difference in usage can be attributed to different factors in the respective languages as to what determines an *interior* distinct from a *surface*, *exterior*, or *periphery*.

2.1.2.2 *Approximation to a point/line/surface*

Herskovits elucidates these approximations by referring to a "tolerance space" such that any two points less than a certain distance (the tolerance, or "resolution") apart are not distinguished (see Zeeman: 1962). Our ability to allow for a tolerance space accounts for the fact that certain objects may be viewed as being a point, that a strip may be viewed as a line, or a lamina as a surface. E.g. (from Talmy: 1983, 259),

approximation to a point (or as two coincident points): the train at Victoria Station;

approximation to a line: an ant crawled along the pencil;

approximation to a surface: the cat on the grass.

The acceptable tolerance in a given case is not something absolute, but as Herskovits (1982, 155) notes, it depends on general knowledge about the objects, their usual interaction, and the usual human interactions with them. It is a kind of geometric idealization that is reminiscent of the effect distance has on how we perceive an object. Herskovits (1982, 157) reflects this in her "quasi-principles" about this kind of schematization:

(2.1) An object can be described as a point if viewed as from a great distance, and if there is no 'great' disparity between its various dimensions.
An object can be described as a line if viewed as from a great distance, and if one of its dimensions is conspicuously greater than the two others.
An object can be described as a surface if viewed as from a great distance, and if one of its dimensions is conspicuously smaller than the two others.

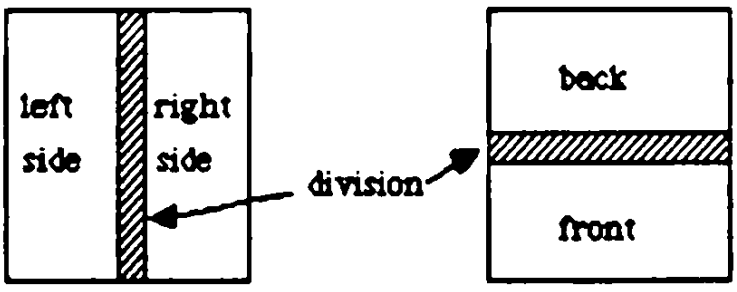
2.1.2.3 *Partitioning of objects*

This type of idealization may also be described as picturing a chunk of an object. Herskovits (1982, 243) shows that this is possible no matter how irregular a geometrical construct it may be; e.g., "the front of the tree" as the face of the three-dimensional outline (of the branches) of the tree in The bird is in the tree, toward the front. The following summarizes some of the points in Herskovits (1982, 243-248 including the diagrams below) on the methods by which chunks and faces (front, back, sides) are delimited.

- Rectangular object

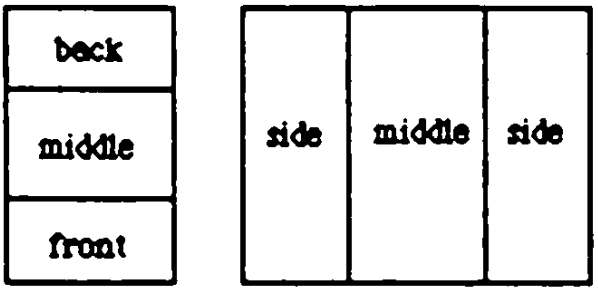
As the following figures show, the sides of a chunk border on the corresponding face, the two edges adjacent to that face, and an inward boundary. (The description is limited to a two dimensional figure, but extension to a parallelepiped is straight forward.) The inward boundary is determined by context, by some particularly relevant dimension line. A salient division parallel to the front-back axis will be used to divide the right from the left side (e.g., a corridor in an apartment) or a salient division parallel to the left/right axis will divide front from back.

(2.2)



A three way contrast is also common, as in (2.3).

(2.3)

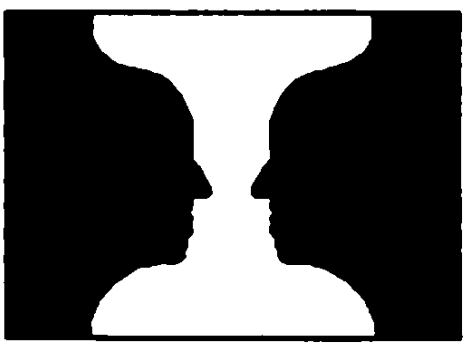


2.1.3 *The disjunctiveness of schemas*

Talmy (1983, 269) makes an important observation about the various schematization possibilities at the "fine-structural" level: a fundamental characteristic is their disjunct, rather than continuous, mode of representation. Languages do not make use of a "schema continuum", with an array of schemas, each differing from its neighbors by only one feature in a fairly continuous way. "Rather, each language uses a small set of (quantally) separated schemas with which to represent all possible spatial configurations. Each schema differs from the others by a *number* of features *simultaneously*" (Talmy: 1983, 269, emphasis in original). The means by which the "cracks between schemas" are filled in will be discussed in section 5.1, "On how English, Polish, and Russian structure space".

Finally, following Jackendoff's Conceptual Structure Hypothesis (see section 1.4.2) the mental processes that are entailed in the application of one or another schematization must involve segmentation of the environmental input and unification of disparate parts, processes that the Gestalt psychologists found to be involved in visual perception. Jackendoff invokes the well-known example of these processes via the picture

(2.4)



seen either as a vase against a black background or as two profiles of faces against a white background. The example is normally perceived as switching from one interpretation to the other, although the environmental input does not change. He notes that the mental processes that create these different organizations of the input are both automatic and unconscious. They are susceptible to voluntary control only to the extent that one can, for example, choose to see the "faces" rather than the "vase" in the example. Are the "faces" silhouetted against a white background, or is the "vase" in front of a black background? For a given spatial situation the choice of which possible schematizations may be applied must be determined equally unconsciously.

2.2 Semantic Conditions

The comparative semantic analysis in this study will be undertaken by comparing the core meanings of what are normally considered Polish and Russian translation equivalents of the selected group of English prepositions, as well as the different use types in which these meanings occur in spatial constructions. The core meanings will be expressed as relations, normally between two or three geometrically schematized objects, and thus will deal with points, lines, surfaces, volumes, and vectors -- geometric descriptions as discussed in the previous section. As clarified in the section "Hypotheses", the meanings will not be considered as relations between real-world objects; the meanings of the prepositions are proposed to relate rather to the conceptualizations of these objects.

2.2.1 *Their content*

Listed below are spatial concepts that occur in the meanings of the prepositions in this study. Four classes of concepts, as per Herskovits (1986, 55), will be distinguished: 1) topological, 2) geometric, 3) physical, 4) metric.

1) topological
    relations of contact
        coincidence

intersection
boundary
interior

2) geometrical
point
line
surface

3) physical
relations of support
attachment

4) metric
proximity/juxtaposition

The meanings I will propose have been defined partly on the basis of the numerous previous semantic analyses that I have considered, partly through introspection, and in part based on questioning of native speakers. But unlike in most previous analyses, evidence will be cited here for the psychological reality of core meanings wherever possible (i.e. studies in perceptual psychology whose data support the choice of one meaning over another). Psycholinguistic experiments which relate more specifically to these prepositions would need to be conducted, however, to further support or to deny the cognitive reality of the meanings I propose here.

2.2.2 *Their nature*

A common approach in previous attempts at citing semantic primitives has either been to propose that they simply "add up" to compose a word meaning or, following the example of phonology, to propose a system of semantic features, each bearing "+", "-", or "0" values (as in Weinsberg: 1973, and Cienki: 1987). The insufficiencies of such approaches have been discussed in the Introduction.

I will explore the theory proposed by Jackendoff (1983) that a lexical entry entails a set of **conditions in a preference rule system**. Thus I will be discussing word meanings as **semantic conditions**. The notion of preference rules in cognition is based, again, on ideas from the Gestalt psychologists, and was first developed by Lerdahl and Jackendoff (1983) in their *Generative Theory of Tonal Music*. Jackendoff

(1983) then extended the application of preference rules to semantics. A very similar notion has been proposed independently by Lakoff (1987); he discusses how word meanings and other reflections of cognitive categories may be determined by *clusters of interactional properties*.

Jackendoff describes the ideas involved by citing Wertheimer (1923), who studied the perceptual principles organizing collections of shapes into larger units. With the circles in (2.5), for example, the organization that is most salient and that one perceives most spontaneously is that of three circles to the left of two other circles. (These figures are adapted from *Semantics and Cognition*)

(2.5)

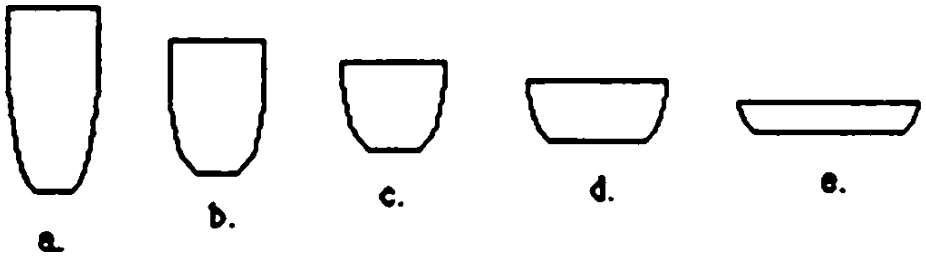
O O O O O

Relative proximity is the principle that determines which circles will form a visual group. Extending such ideas to the study of musical compositions, Lerdahl and Jackendoff developed principles to explain structures which listeners attribute to pieces of music. They called these *grouping preference rules*; "'preference rule' because these rules establish not inflexible decisions about structure, but relative preferences among a number of logically possible analyses" (Jackendoff: 1983, 132). Their hypothesis is that "one imposes on a musical surface a projected "structure" that represents the highest degree of overall preference, when all applicable preference rules are taken into account" (Jackendoff: 1983, 132).

In *Semantics and Cognition*, Jackendoff also presents preference rule systems as a valid way of capturing word meanings. According to him, it appears that at least three sorts of conditions are required for an adequate description of lexical semantics. First, we must have **necessary** conditions: e.g., "red" must contain the necessary condition COLOR. One cannot make sense of redness without coloration. But not all conditions fall into this category, as noted in the section of this book on "Insufficiencies of the Standard Approaches", and as we will now explore further.

Consider the following experiment by Labov (1973) in which he presented people with pictures of containers that differed in the ratio of width to height, and asked them to label the pictures "vase", "cup", or "bowl". (The illustrations here are based on Jackendoff's (1983, 137) discussion of this study.)

(2.6)

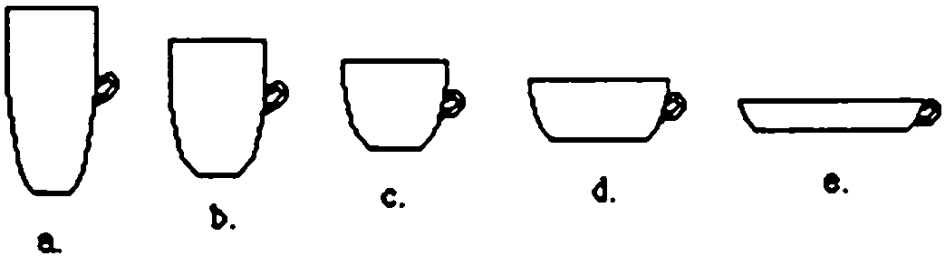


At certain ratios, such as at a., c., and e., the responses were relatively uniform (as expected, "vase", "cup", and "bowl" in that order). But at intermediate ratios, such as b. and d., two different responses were equally probable. At these ratios, the choice is highly sensitive to context effects, such as the exact form of the question or the immediately preceding examples, and as Jackendoff (1983, 86) asks, "if one person chooses to call [one of the intermediate examples] 'a vase' and another 'a cup', is either of them *wrong*?"

Necessary conditions bear an implicit "yes or no" question; red bears the necessary condition COLOR, whereas, say, circle does not. But necessary conditions are inappropriate for such graded judgments as in Labov's example. Color terms differentiated by focal hues around which other examples of the given color differ by degrees, are also an example of graded conditions. "These conditions" says Jackendoff (1983, 121), "specify a focal or central value for a continuously variable attribute; the most secure positive judgments are for those examples that lie relatively close to the focal value of the attribute in question." Consequently he calls such graded conditions **centrality** conditions.

For the third type of condition, we can return to Labov's study and consider how the same examples were labelled when they each bore a single handle:

(2.7)



In those cases (b. and d.) in the previous, handleless examples, where the drawings were judged to be vague between cups and non-cups, they were now more likely to be judged cups. A single handle is not a *necessary* condition for a cup (not all cups have handles), and in these examples it was not a graded condition (the drawings either had handles or they did not). Rather, Labov observes, having a single handle is a **typicality** condition on cups, but not on vases and bowls. A single handle may be typical of cups, but it is subject to exceptions. Jackendoff relates this to Wittgenstein's discussion of what various sorts of games have in common that they can all be called "games". The array of conceivable games in the world is extremely diverse, and at most what can be found as common traits among them are "a complicated network of similarities overlapping and criss-crossing: sometimes overall similarities, sometimes similarity of detail" (Jackendoff: 1983, 119). Wittgenstein characterizes them as "family resemblances" since they overlap and criss-cross in the same way as do the various resemblances between members of a family (eye color, physical features, gait, etc.).

Word meanings, then, can be viewed as consisting of a homogeneous mixture of necessary, centrality, and typicality conditions. Jackendoff (1983, 121) notes that words can differ widely in which kinds of conditions are most prominent. Kinship terms are an outstanding example of words entailing mostly necessary conditions, whereas in color names centrality conditions play the most crucial role, and game is best specified by a number of typicality conditions that are subject to discrete exceptions. Cuyckens (1984b) advocates a similar non-unified theory of word meaning such that "different parts of the lexicon may display different semantic structures" (p. 72). Whereas con-

cepts set up for special technical purposes entail certain criterial features by definition (what are called here "necessary conditions"), other concepts such as artifacts from daily life require no such set criteria and exhibit concept structure of a prototypical nature (e.g., the typicality features distinguishing a cup from a mug); yet other concepts (such as bird) may exhibit a dual structure depending on whether they are being used as an everyday (natural kind) term or for a scientific purpose.

Since I will be analyzing the nature, and not only the content, of the individual conditions that make up word meanings, I will always indicate which type of condition is being referred to in my notation of core meanings, be they necessary (Nec), centrality (Cent), or typicality (Typ) conditions. For example, English on used in the context

"Spatial Entity (SpE) on Localizer (L-r)"

can be analyzed with the following conditions:

SpE CONTACT WITH SURFACE OF L-r (Typ)

L-r SUPPORT SpE (Typ).

The above types of conditions are characteristic of preference rule systems for word meanings and appear widely in the psychological literature. We will now explore further what characterizes systems of preference rules.

Consider how the principles proximity and similarity work together in visual perception. In Wertheimer's example (here, (2.5)) we saw how the principle of proximity is sufficient to bring about a grouping judgment. However, a different grouping can be salient if another principle for grouping applies. In the following example

(2.8)

the difference in size of the circles produces a judgment based on similarity; elements that are more similar in structure tend to be grouped together. Thus the principles of proximity and similarity are each sufficient to bring about a grouping judgment, but

neither is necessary for such a judgment since if the preconditions for one of them are missing, the other principle may apply. Similarly, a single handle is a typicality condition on cups, and a sufficient one to judge containers with a wide range of height-width ratios as cups, but not a necessary condition for cup.

What happens in situations where two principles both apply, but in a conflicting manner? Wertheimer discusses this as well. In this example,

(2.9)

the principles of proximity and similarity conflict. The resulting intuition is ambiguous: one can see the middle circle as part of either the left-hand or the right-hand group, and it may even switch spontaneously, as in the vase-faces example in the previous section.

In (2.9), the two rules conflict since they basically balance out: neither one overpowers the other. However, if the distance between the second and third circle is increased:

(2.10)

then proximity exerts a greater effect in forming a grouping judgment and overrides the principle of similarity. Preference rules, then, can have different weights or strengths which determine which grouping is more salient and in turn which perceptual judgment is made. When the drawings in Labov's study had handles, the ones with extreme height-width ratios (labelled a. and e.) were still not judged to be cups. That factor overrides the typicality condition of having a handle. In the following example:

(2.11)

proximity and similarity reinforce each other: the resulting grouping intuition is quite strong and the groupings are stable (they do not appear to switch as in (2.9)).

Similarly, the middle drawing in (2.7), with a typical height-width ratio for cups, is even more likely to be judged a cup when a handle is added, since this condition simply reinforces our expectations of what a cup looks like and produces an even more stable judgment of cup.

Let us sum up the symptoms of preference rule systems discussed above (adapted from Jackendoff: 1983, 152):

(2.12)
1) judgments of graded acceptability and of family resemblance;
2) two or more rules, neither of which may be necessary, but each of which is under certain conditions sufficient for a judgment;
3) balancing effects among rules that apply in conflict;
4) a measure of stability based on rule applications;
5) rules that are not logically necessary used as default values in the face of inadequate information.

The last point, which was not discussed above, will be related to semantics in the section "On Comprehension and Production".

Jackendoff (1983, 83) points out the prevalence of preference rule systems over the whole spectrum of different psychological processes, from low-level perceptual mechanisms to problems in our conscious life, some even great enough to be of social and political concern. He cites the decision process, "Shall I answer the telephone, or finish what I'm doing? Should I make more profit, or better preserve natural resources?" Countless times every day one must determine a course of action in the face of two or more conflicting preferences. He notes that if the preferences reinforce each other -- if answering the telephone helps me finish what I'm doing, or if the most profit can be made by maximally preserving natural resources -- then there is no difficulty in making a judgment. (Cf. the reinforcement-conflict pattern of preference rules.)

In cases where it is not as easy to arrive at a decision, it would certainly be difficult to say objectively just how much more "weight" one or another preference bears, and to calculate how the resulting decision was arrived at. Jackendoff (1983, 152) also admits that the prospects for a fully quantified theory of preference rules are discoura-

ging. Nevertheless, the fact that we can and do make such decisions all the time, intuitively, is proof of the functionability of these systems, and the ubiquity of preference rule systems in cognitive processes makes a most convincing argument for adopting them as part of a theory of word meanings. Furthermore, Jackendoff (1983, 158) observes that the combinatorial possibilities that a preference rule system provides gives any fixed set of primitives a far greater expressive power than they would have in a simple feature system.

2.3 Pragmatics

2.3.1 *World Knowledge*

Pragmatics, as it is most commonly considered in relation to semantic theory, entails a "theory of invited reference, relation to discourse, and relation to the world" (Jackendoff: 1983, 208). But it should be emphasized that our "world knowledge" is integrally tied with the "projected world" discussed earlier under the hypotheses to be considered. Our fundamental view of the world is based on our perception of it, and is influenced by the very processes of mental organization. This view is also proposed here to be the ideal toward which the reconstructive work of our perceptual processes tends. Below is an excerpt of Herskovits' (1986, 27) discussion of the "common sense" conception of space and objects we employ in our everyday lives, which she refers to as the "naive" view of the world (since it is naive in comparison with more scientific theories, of physics for example).

(2.13)

> In this view, space is three-dimensional, isotropic, and Euclidean. The earth is immobile; its surface -- the ground -- extends to infinity in all directions and keeps overall, despite bumps and hollows, within a horizontal plane. Above the ground is empty space; underneath, earth and rocks to unknown depth. In places, solid ground gives way to seas, lakes, and rivers, with more or less horizontal top surfaces except , for example, where rivers fall.
>
> The ground supports solid objects, which are con-

> nected[1], discrete wholes. At a given instant, these objects have a well-defined surface, which separates their inner substance from the outside world. Each has a shape, and a location in space...
>
> Liquids may be still, or agitated, or flowing. When still, they are contained, and have a horizontal top surface. Liquid in motion may maintain the same overall shape, and thus constitute an 'object', although none of its parts are the same from one moment to the next. Some 'objects' have even less definite shapes: air, clouds, fog, and so forth. Light, darkness, shadows are immaterial, but may have a more or less definite shape.
>
> Gravity pervades space. Every object, unless it is in motion, or lighter than air, must be supported, either by the ground, or by another object which is itself supported. Water will support some objects and not others.

This description, though certainly not complete in all its details, gives a basic idea of that picture of the world that we resort to in our day-to-day interactions and that we assume others resort to as well. It constitutes what Herskovits calls "the **canonical description** of the world". Reference to the canonical view explains many assumptions we make when hearing a given sentence although they are not warranted by the sentence in itself. Herskovits (1982, 66): "For instance, when told The chair is behind the desk, we will generally assume that both are supported by the ground, or some floor, as we know things to be usually in that 'fundamental' view of the world." Thus world knowledge, part of the pragmatic component that we bring to bear on linguistic utterances, is an integral part of understanding an utterance in a given context; the assumption that others share this reality is also a factor in what makes the economy of our utterances possible -- it would be redundant to verbalize all the world knowledge normally assumed when one talks about a chair being behind a desk, for example.

As discussed in the section on hypotheses, we work on the assumption that we are all dealing with *basically* the same projected world, particularly within a community of speakers of the same language. There are however surely areas in which the

---

[1] "Connected" is a topological notion, referring to an object made of one piece (as with a disk, or plane with a disk removed); a plane from which a circular line has been removed, on the other hand, is not connected.

canonical view is less clearly defined, or where several inconsistent views may mix. Herskovits (1982, 67) notes cases in which counter-intuitive scientific views (such as the rotundity of the earth) have become partially integrated with our intuitive views, and it is not always clear which should be seen as "canonical". She poses the rhetorical questions, "What is the 'canonical' view of the sun? of sugar dissolved in coffee?"

If we say, however, that people are talking to each other assuming basically the same knowledge of the world, it follows that this would include the factors mentioned earlier under "The scope of the study". This means the pragmatic assumption that the objects in the situation being discussed conform to the laws of "common-sense" physics, i.e., the ways in which we understand that ordinary solid objects, liquid and gaseous substances interact as encountered in our daily lives. Thus, Herskovits (1982, 18) points out that The woman walked through the wall would imply that the wall had a gap, not that the woman dematerialized.

Following Jackendoff (1983, 155), who suggests that pragmatic principles may, like the semantic conditions, be best expressed as preference rules, we may cast the principle above as:

(2.14) --Prefer to assume that the entities being discussed conform to the laws of common-sense physics.

Similarly we have other principles, suggested by Herskovits (1982, 18-20), which may be recast as:

--Prefer to assume that objects are where they belong, most of them near the earth, within the field of gravity.

--Prefer to assume that objects are "normal", and where function is relevant, they behave according to their normal function.

These pragmatic principles account for the fact that the preferred way to understand The teapot is on the table, entails that the table stands normally, its top is horizontal, and the teapot sits on it. As Herskovits (1982, 20) notes, "The table is not made out of gingerbread, and hanging upside down from the ceiling with the teapot glued to it."

Although the above-mentioned principles certainly do not comprise a complete listing, they serve as an example; further principles could be formulated based, for example, on the commonly made assumptions that Jurkowski discusses (see "The scope of the study").

2.3.1.1 *Conversational implicatures*

Part of our world knowledge which deserves special attention here involves the techniques we most often employ in conversation. Based on this topic, Grice (1975) has formulated a set of conversational maxims, which are stated as instructions to the speaker. Bach and Harnish (1979, Chapter 8) point out that they apply equally to the process of interpretation by the hearer, where they appear as preferences in how to construe the speaker's intended meaning. Jackendoff (1983, 155) synthesizes these views, observing that the maxims can be stated as preference rules, and offers the following five as examples:

(2.15)
a. Prefer to assume that the speaker is telling you all s/he knows. (Maxim of quantity)
b. Prefer to assume that the speaker believes what s/he intends to convey. (Maxim of quality)
c. Prefer to assume that the speaker has only one meaning in mind.
d. Prefer to assume that the speaker is conveying something relevant. (Maxim of relevance)
e. Prefer to assume that the speaker is speaking literally. (Presumption of literalness)

2.3.2 *Purpose*

I would like to focus briefly on the fourth maxim presented above, since as Herskovits (1982, 145) points out, the need for relevance explains the inappropriateness of many expressions. Since the relevance of one expression or another in a given context depends on the speaker's purpose, we need first to look at the role that purpose plays. According to Herskovits (1982, 53) the most common purpose of a locative phrase is to give a spatial constraint on the place of SpE sufficient for the hearer to easily find

it, but not so precise as to require a needlessly cumbersome expression. Herskovits (1982, 53) suggests a number of pragmatic principles that are normally followed when choosing a localizer in order to abide by this constraint; again, I will state them in the present terminology and as preference rules. For example,

(2.16) --Prefer a localizer that is either known to the addressee, or easy to discover.

"Ease of discovery" is most often determined by an object's salience; for example, something relatively big, bright, or odd, etc. is pragmatically a preferred localizer.

(2.17) --Prefer a localizer that is spatially related to the located entity in as simple and direct a manner as possible.

As a result of this, one should need only one single locative phrase, or at most two, to express the relation. As a further consequence, Herskovits notes, all objects closely associated with the located object normally have priority over more distant ones.

Herskovits (1986, 31) adds that the context in which the speaker uses the locative phrase may be the consequence of some ulterior goal. If one says I bought this present in a store on Fifth Avenue, their purpose may not be to help the addressee find the store. Rather the speaker may want to draw attention to some of the consequences of the particular location specified (such as the likely good quality of the present, the fact that it was expensive, etc.). The upper goal of describing some characteristic of the present led to the subgoal of "giving a constraint on the location of the store where it was bought."

2.3.2.1 *Figure and Ground*

The way this purpose of "giving an appropriate constraint on the place of an object" is achieved is dependent on the syntax of the locative construction: the subject of the spatial preposition (SpE) must refer to the object whose location is at issue (Talmy: 1978); the object whose location is taken for granted (L-r) follows the preposition. The contrast between The house is near the church, and The church is near the house

reflects which of the two objects' location is at stake: the house in the former, the church in the latter. This syntactic rule is related to the fact that in the "unmarked" situation, the topic is also the subject of a sentence in English. In locative expressions then, the object whose location is at issue will tend to be the topic, and the subject of the expression (Herskovits: 1986, 35). The topic usually involves old information, and will often be marked accordingly by the definite article the or a definite modifier, e.g.: The/our house is near a church. A topic involving new information, marked as indefinite, is less common in subject position, and is often introduced by an existential there: There is a house near our church, rather than *A house is near our church.

Following Talmy, I will also sometimes make reference to the first object (SpE) as the "Figure", and to the second (L-r) as the "Ground". These notions were originally described in Gestalt psychology; for their application in linguistics, Talmy (1983, 232) characterizes them as follows:

(2.18) The Figure is a *moving* or conceptually move*able* object whose site, path, or orientation is conceived as a variable the particular value of which is the salient issue.

The Ground is a reference object (itself having a stationary setting within a reference frame) with respect to which the Figure's site, path, or orientation receives characterization.

Herskovits (1982, 60-63) discusses some of the practical restrictions on just what sort of objects can take on the roles of Figure and Ground. She notes that the following sentences sound as least odd, if not completely unacceptable:

*The cognac bottle is the one in/under a cap.

*Paint the wall against the chair in blue!

*The gate is at Mary.

She comments that in each such unacceptable case, the Ground object is small and mobile relative to the Figure object. ("Relative mobility" here should be understood in terms of the action which normally brings the two objects together; the cap is put on

the bottle, not the bottle in the cap.) Conceptual mobility is basically related to physical mobility: objects whose location is at stake are typically smaller and more mobile than those that serve as reference. Herskovits (61-62) continues:

> That size and mobility should be correlated with conceptual mobility makes sense, since salience -- most often simply a matter of size -- and 'fixity' are characteristics which should make an object a 'good' and frequently used reference object ("fixity", because the position of objects which do not move around much is more likely to be known to the addressee).

We see here that another characteristic of "ease of discovery" as discussed under "Purpose " (in addition to size, brightness, oddity, etc.) will be a stationary setting within the reference frame. She continues,

> Since the Ground object is typically bigger and less mobile than the Figure object, locative constructions where this relation is inverted, though they might be quite useful in some particular contexts, are frequently unacceptable.

Herskovits (1982, 62) observes that expressions involving human beings often provide an exception: human beings, as preferred topics, often play the role of Figure to a much smaller and mobile object:

The man in the blue cap.

Talmy (1983) discusses Figure and Ground geometries at some length. One of his major points is that the "closed class" elements of language generally characterize the Figure's geometry much more simply than the Ground's. This makes sense since in the process which spatial relations perform, of giving a constraint on the location of an object, our predominant concern is with a smaller portion of focal interest within a broader field. Accordingly, he says (p. 234), "elements like prepositions largely delineate a field and the reference objects therein with some particularity, while typically treating the focal object as reducible simply to a geometric point."

2.3.2.2 *Salient Part*

It is often the case in a spatial expression that only part of an object is meant

when in fact the SpE or L-r is named by the entire object. In such cases, it is actually only the salient part of the SpE or L-r that comes into play in the spatial relation. E.g.,

She is under the tree

in which "she" is actually under the branch part of the tree; or,

the line at the counter

where the head of the line and the front of the counter are the relevant parts. Herskovits (1982, 152) devises a "near principle" to explain this usage, which we will consider another preference rule:

(2.19) --One can use a noun that basically denotes a whole object to refer to a part of it, provided that the part is typically salient.

2.3.3 *Relevance*

Let us return to the fourth of Grice's maxims (2.15). Herskovits (1982, 145) reformulates the maxim of relevance from the speaker's perspective; rephrasing the principle (as she adjusts it) as a preference rule we obtain the version:

(2.20) --Given a particular situation, and several expressions such that their normal interpretation matches the given situation, prefer the one(s) that is (are) maximally relevant.

She illustrates the principle with the example sentence The cat is on the mat. Would one use this sentence to locate the cat if only its front paws were on the mat? This depends on the relevance of the partial contact between the cat and the mat. Thus a speaker concerned with the cleanliness of the mat might say, "Move the cat off the mat," implying it is on the mat, while a speaker concerned with the cleanliness of the floor around the mat might say, "Move the cat onto the mat," implying the cat is not on the mat.

2.3.3.1 *Function*

Herskovits (1982, 147-8) also notes the importance of the relation of the func-

tion of the objects involved to the relevance of a spatial expression in a given situation. She returns to the example (which was also cited in section 1.3.4 above):

(a) The bulb is in the socket.

(b) The potato is under the bowl.

Assume the speaker is concerned with the location of the bulb with respect to the socket in the first example, and with the location of the potato with respect to the bowl in the second. Then both The bulb is in the socket and The bulb is under the socket would apply to the scene in (a), and both The potato is in/under the bowl would apply to the scene in (b). She explains further (p. 148),

> However once we decide that, in the context at hand, function is the most relevant aspect of these objects, then a particular preposition imposes itself in each case. With the socket, by using in, we allow the inference that the bulb may work, that there will be light; by using under, neither of these assertions follow. In the case of the bowl, if the speaker used in, the hearer would assume that the speaker chose a maximally relevant expression, and be misled into believing that the potato is contained in the bowl in the normal way, that it can be carried around by picking up the bowl.

Herskovits demonstrates convincingly, through this and other examples, that the function of objects is something that, most often subconsciously, is generally very important to us. As a result, any statement implying that the objects are, or are not, interacting functionally tends to be maximally relevant. Thus she formulates a final, more specific corollary to help determine a maximally relevant expression. Phrased here as a preference rule, it is:

(2.20a) --Given several expressions such that a given situation matches their normal interpretations, if one of them implies that the objects are interacting (or, alternately, are not interacting) according to their normal function, prefer to select that expression as most relevant.

When this preference rule is applied, say to the scenes (a) and (b) in the diagrams above, the most natural description of the pictures is the one relevant to the function of the objects; the "unmarked" context therefore is the one in which function is highly relevant.

2.4 Use types

2.4.1 *Use types and idiomaticity*

The semantic conditions and pragmatic principles just described are not, however, the only factors determining the applicability of one preposition or another in a given situation. Consider phrases which are commonly labelled idioms, e.g., "to take the wind out of one's sails". Virtually any normally non-idiomatic expression can acquire an idiomatic status in the proper context (Hockett: 1958, 303-309), and if the context is a common one, the idiomatic meaning may entirely displace its literal meaning (e.g. The coast is clear).

The analysis of idioms affords many problems for a theory of language, especially for theories which insist that the semantic interpretation of sentences is a compositional process. King (1974, 121-122) reviews how some theories have attempted to deal with these problems. The idiomatic meaning of an idiom results, in general, from a metaphorical interpretation of the phrase's literal meaning (provided it still has one). For this reason, as King notes, theories posited in the past that have interpreted idioms by suppressing their literal meanings or which set up special lexical entries for idioms are inadequate.

An insightful treatment of the problem has been suggested by Herskovits (1982, 1986). She says that the normal interpretation of a construction may involve a transfer of the basic meaning, and that such transfers are usually limited or constrained as to the contexts in which they may be used. Transfers and additional constraints, she continues, are either arbitrary or inferable from pragmatic principles and world know-

ledge. "But arbitrariness does not mean that every locative construction has its own particular rules of use; there are classes of locative constructions obeying the same set of rules, and such a class is a use type" (Herskovits: 1982, 115). I will employ the idea of use types in this study as a descriptive device, a way of classifying and discussing groups of phrases that use a certain preposition in a certain context to achieve "the same" interpretation.

As such, a use type can be seen as two-sided. It consists of "(a) a phrase pattern centered around a preposition, with constraints defining appropriate categories for the subject and object, and (b) a characterization of the normal interpretations of all locative constructions generated by the phrase pattern" (Herskovits: 1982, 25). Thus each use type entails a representative phrase pattern, a matrix that can be seen as an example for an infinite range of similar locative constructions. Mary is at her desk is an example of the use type "SpE at object of activity".

2.4.2 *Use types as indicating the categorization of entities and situations*

The same core meaning, then, runs through all the use types for a given preposition; the use types serve as a device to specify the range of applicability of each preposition in the given language. In this respect I diverge from Herskovits who speaks of use types as involving transfers of the core meanings of prepositions. I propose that the arbitrary element in the use of certain constructions that makes them idiomatic does not involve transfers of the prepositional meanings. Rather, it is the categorization or *pre-schematization* of entities and situations (both SpE's and L-r's) that different languages require in different contexts that makes for the idiomatic nature of certain prepositional constructions.

Wunderlich (1985) states that the locative prepositions as well as adjectives and the verbs of positioning (e.g., stand, lay, sit) all have fixed meanings; however, one

cannot deduce from this how any given language will categorize different objects. The usage of locative prepositions, adjectives, and positioning verbs, he continues, can serve as a way of discovering the categorizations made in individual languages. This then is another goal for the implementation of use types: as a means to point out the semantic categorization of certain types of objects and situations in a given language and allow for the comparison of these categorizations across different languages. Mastering what are considered idiomatic phrases is certainly one of the more difficult tasks in learning a foreign language. We will see that the recognition of how a language categorizes a noun in a given idiom gives a much clearer insight into the choice of translation equivalents for that idiom in other languages.

Bierwisch (1967) was the first to clarify the relationship between the usage of adjectives of location and the categorization of objects. He explains that the noun is attributed with a semantic characterization which in turn determines what adjectives can be appropriately used with it. A plane's elevation in the sky is perceived through English as a matter of height and so a plane flying close to the ground is flying "low". For a German speaker, a plane's elevation is a matter of depth in the sky, and the same plane would be described as flying "deep" (tief) (see Wunderlich: 1985, 73).

As mentioned above, Wunderlich extends this idea of the dependence on nominal semantics to locative prepositions and verbs of positioning as well. He refers to a kind of matching that takes place between the meanings of the prepositions and nouns, whose categorizations may or may not be compatible with these meanings. In English a vehicle, such as boat or a bus, which is *large* and *in the context of travel* can be classified as a "carrier". This can account for the compatibility of these nouns with on in expressions like the man on the bus, the crew on the boat: the typicality condition of SUPPORT in the meaning of on, implying the L-r can carry the SpE, is compatible with the categorization of the boat/bus as a carrier in English. As explained in section 2.3, we prefer to assume that the objects are interacting according to their normal

function, and so the man on the bus is assumed not to be on top of the bus. However, if someone said Look at that bird on the bus, we would normally look at the top of the bus: the normal function of a bus is not that of carrying birds inside as passengers.

The two possible readings of on the bus mentioned above reflect different categorizations of the bus: as a means of transportation or as an object providing a supporting surface. Ambiguity of this kind will serve as one means of distinguishing different use types. Use types will also be distinguished (as per Herskovits: 1986, 87-88) by the application of an "identity test" for ambiguity (Lakoff: 1970). Herskovits, for example, points out the distinction between containment and embedding as separate use types for in with the sentence

*There is plutonium and a crack in the vat.

The sentence can only reflect one or the other categorization of the vat at a time (either as a "container" or as a "filled solid"), but not both at once, with the result that the sentence is anomalous. A further criterion for differentiating the use types that a single preposition admits is the fact that different use types may often be paraphrased differently. For example, the sentence She was in a blue dress illustrates the use type "person in clothing" for in, and She was in the house illustrates the use type "containment". While the former may be rephrased with the verb wear or the expression had (something) on, the latter clearly may not.

2.4.3 *Selection restrictions*

Chomsky (1965) presents the idea of selectional restrictions and suggests that they be formally treated as conditions on lexical insertion -- essentially, that a verb cannot be inserted into a sentence if its arguments violate its selectional restrictions.[1] However, as Jackendoff (1987c, 385) and others have pointed out, if we are interested in accounting for the interpretations of sentences as well as their grammaticality, Chom-

[1] I will opt below to simply call them selection restrictions.

sky's formalization is not enough. It tells us, for example, that Harry drank it, is grammatical, but it does not tell us that it in the sentence is understood to be a liquid. Weinreich (1966) handled this problem with some success with his "transfer features" (430):

> An example of a transfer feature would be the feature [+Time] in the preposition during or the postposition ago; that is to say, whatever word is constructed with during or ago has a feature of [+Time] transferred to it.

Thus King (1974, 26) observes that transfer features explain why the phrases during the war and even during the wall are understood as referring to the time periods during which the war was fought or the wall stood.

Jackendoff (1987c) advocates a similar approach with his use of selectional restrictions. He argues that selectional restrictions are constructed out of a subvocabulary of conceptual structures, and thus the appropriate level for stating them is semantic, not syntactic. While Jackendoff's focus in that article is primarily on the use of verbs, he does give one example of how the selectional restrictions for prepositions might be stated (using the example into). In the present work I will explore the applicability of his formalization of selectional restrictions in my descriptions of the prepositional use types. In addition to stating a descriptive phrase matrix for each use type, I will also state (using Jackendoff's notation) what I believe are the specific selection restrictions on the object (or subject) of the preposition that the use type exemplifies. For example, for the use type "person in clothing" (e.g., the man in the hat) there are the following selection restrictions in Polish, Russian, and English on the prepositional subject (SpE) and object (L-r):

$$[([_{\text{Thing}}\text{HUMAN}]_{\text{SpE}}, [_{\text{Place}}\text{IN}([_{\text{Thing}}\text{CLOTHING}]_{\text{L-r}})])].$$

In Cienki (1987) I note that "the categorization of individual nouns such that they are used only with certain prepositions can become fossilized, resulting in 'set' prepositional phrases in a language, e.g., R v universitete, but P na universytecie." These phrases, which represent more idiomatic use types, are marked by tight semantic

restrictions on the subject (SpE) or the object (L-r) of the preposition with selection restrictions that are narrow in scope. Herskovits (1982, 119) cites "spatial entity 'at sea'" (e.g., The ship is at sea) as a particularly idiomatic type. The factors which bring about a fossilized phrase in a language stem sometimes from dialectal influences, and historical changes in the language. Talmy (1983, 269) indicates that the categorization of nouns might also "reflect cultural norms that respond to an object's size, its frequency of occurring together with other like objects, its resolvability into some substance-like homogeneity, and so forth." I will explore some of these historical and cultural factors in the discussions of the individual use types.

Idiomaticity of use types, then, will be recognized as a matter of degree, with some use types recognized as more idiomatic than others. In the semantic analysis itself, I will discuss the use types for each preposition and its "translation equivalents" in the other two languages in order of increasing "idiomaticity".

2.5 On comprehension and production

The preceding sections of this chapter have laid out the basic framework to be employed in this comparative analysis, involving different types of semantic conditions and conceptual selection restrictions. In this section I will offer some views on how this framework fits into the broader scheme of language usage, that of comprehension and production.

2.5.1 *Default values*

In section 2.2.2 I discussed four traits that are characteristic of preference rule systems. Below I will discuss a fifth trait that was only mentioned in 2.2.2, which is

> 5) rules that are not logically necessary used as default values in the face of inadequate information.

Jackendoff (1983, 140-141) explains that the notion of a default value is an important contribution of computational theories of cognition. He uses the example of a

birthday party to demonstrate the notion. If we were to walk into someone's house (or watch a segment of a movie) and see a group of people celebrating, someone blowing out the candles on a cake, and the others giving that person presents, we would probably conclude that we were witnessing a birthday party. There is no fixed set of criteria which must all be checked off to determine what situation we were viewing. Rather, the few things we saw would probably be enough to reach a relatively stable (but perhaps tentative) conclusion, and other features common to that situation (here, other birthday traditions) would then be inferred by default. Conversely, the information which produced the interpretation "birthday party" is the same information that would be evoked in the anticipation of a birthday party to which we had been invited. The same information that is used to understand or interpret the visual input as belonging to that event can be used to produce an image of that event in our minds.

The above phenomenon is characteristic of the behavior of preference rule systems, and also, Jackendoff (ibid.) argues, of the set of semantic conditions comprising a given word meaning. A set of semantic conditions for the use of some word defines an internal standard against which environmental input can be "checked". It is not, however, like a set of necessary and sufficient conditions which must all be checked to arrive at a judgment. Rather, only enough need to be checked to establish a satisfactory degree of stability in categorizing the input as a token of that concept (or those concepts) for which we use some given word. Once one has arrived at a judgment, though, there may be preference rules that have not been (or cannot be) checked against the available input. The idea advocated by Jackendoff is that "one can turn around and employ these unused preference rules to supply default values for features of the concepts that have not been established during identification or categorization" (ibid.).

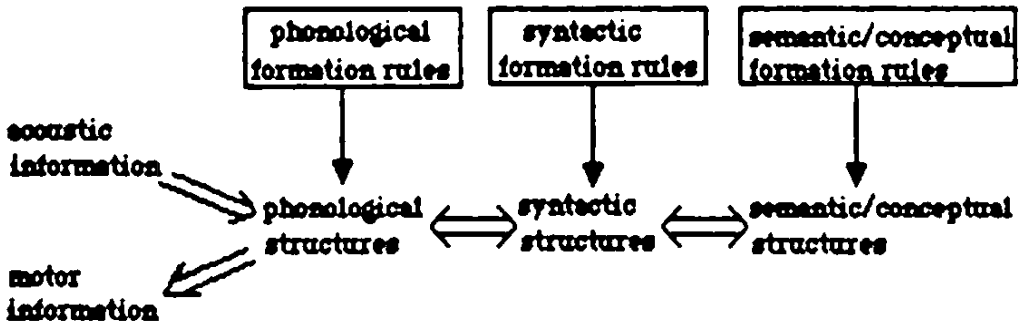
Applied to the present study, this would mean that for the process of language production the speaker takes his/her categorization (i.e. schematization) of the localiz-

er, and its relation to the Spatial Entity being located and chooses an appropriate preposition to express them. Of course the vocabulary available in a given language may not always provide a preposition to describe exactly what the speaker wants, in which case one must choose the preposition which represents the schema closest to that intended, or resort to some circumlocution. (See Talmy 1983 and section 5.1 below.) In terms of language comprehension, on hearing the speaker's choice of a certain preposition, the hearer knows not only what spatial relation between the SpE and L-r to conceptualize, but also how to categorize the L-r; the preposition determines which selection restrictions may be placed on L-r and thus relate how it was schematized. For example a speaker can evoke in the listener the schematization of a building (say, a store) as a CONTAINER by using in (Jean is in the store) or as a dimensionless POINT by using at (Jean is at the store).

2.5.2 *The Logical Structure of Language Processing*

Jackendoff (1983) proposes that semantic structure is conceptual structure. The following diagram (adapted from Jackendoff: 1987a, 92) presents the relationship between this semantic/conceptual level and the phonological and syntactic levels of linguistic representation.

(2.21)



> Each level of representation is defined by a set of formation rules: the primitives, principles of combination, and if there are sublevels, principles of derivation between them. Each double arrow...stands for a set of correspondence rules: principles of translation between a pair of levels of representation (ibid., p. 91).

At a minimum then, comprehension requires that the acoustic information of an utterance be mapped onto a semantic structure. "The organization of linguistic structure dictates that the only possible way to translate consistently and productively from sound to meaning is to invoke the correspondence rules, mapping acoustic information into phonological structrure, then phonological structure into syntactic structure, then from syntax into meaning" (ibid.). Language production, on the other hand, presumably starts with the formation of a semantic structure -- an intended meaning. Again, according to the logical organization of language this would then be mapped onto a syntactic structure, then a phonological, and finally into motor information for the vocal tract to produce the appropriate sound waves. Jackendoff codifies this argument as the Logical Structure of Language Processing (ibid., p. 92):

> *Logical Structure of Language Processing*
> Real-time mapping between meaning and the periphery (acoustic or motor) must proceed by way of the correspondences in [figure (2.21)], passing through translations into phonological and syntactic format.

He then goes on (ibid., Chapter 6) to consider three hypotheses as to how this might work in more detail in a theory of processing. He gives evidence that the most convincing hypothesis is that language processing works by means of an interactive parallel process, which is governed both by processors that integrate the information at each level into a unified structure, and by translation processors that map the information from one level to the next in such a way that each part of each linguistic level of representation is derived by virtue of correspondences with neighboring levels.

2.5.3 *Syntax and semantics*

Let us consider in more detail the translation process between the semantic and syntactic levels (adapted here from Jackendoff: 1987d). According to the framework of Conceptual Semantics, this entails rules for correspondence between syntactic constituents and conceptual constituents. The syntactic constituents referred to are the

major phrasal constituents: S, NP, AP, PP, and so on; the conceptual constituents concerned here are those representing the major conceptual categories mentioned earlier in section 1.4.2, they being Thing (or Object), Event, State, Action, Place, Path, Property, and so on. "The fundamental principle is that, in a sentence, every content-bearing major phrasal constituent...corresponds to a conceptual constituent of some major conceptual category. (The stipulation 'content-bearing' is intended to exclude elements like expletive it and there.) The converse is not the case, however" (ibid., 376). The last sentence refers to the fact that there may be conceptual constituents in the meaning of a sentence that do not correspond to any syntactic constituent.

> Within this primary correspondence rule, there are subsidiary principles, partly language-specific, concerning which syntactic category can express which conceptual category. NPs can express almost any conceptual category (horse = Thing, earthquake = Event, redness = Property, and so on). A PP can express a Place (in the house), a Path (through the tunnel), and in English, idiomatically, a Property (in luck, out of your mind). An S can express an Event or a State. (ibid.)

The correspondences appear in a markedness relation. In the unmarked cases, for example, NP expresses Thing, and S or VP express Action or Event.

Jackendoff (ibid.) provides the following example as a first approximation of the relation of syntactic and semantic constituent structure:

a. *Syntactic structure*
[$_S$ [$_{NP}$ John] [$_{VP}$ ran [$_{PP}$ into [$_{NP}$ the room]]]]

b. *Conceptual structure*
[$_{Event}$ GO ([$_{Thing}$ JOHN], [$_{Path}$ TO ([$_{Place}$ IN ([$_{Thing}$ ROOM])])])].

The sentence corresponds to the entire Event, and the verb corresponds to the Event-function GO. The subject corresponds to the first argument of GO, and the PP to the second argument. Such PPs which express Path arguments will be discussed in Chapter 4 below.

2.5.4 *Semantics and Pragmatics*

Conspicuously absent in the diagram of language processing (2.21) is a pragmatic component. Jackendoff (1983) argues against the semantics/pragmatics distinction, saying (p. 105) that by the theory of Conceptual Semantics, semantic rules of linguistic inference and pragmatic rules of linguistic interaction with general knowledge "are [both] rules for the manipulation of conceptual structures," and hence both fall within the conceptual level. It seems this line of reasoning would only hold with quite a narrow construal of what pragmatics would include. I will not pursue here in detail the theoretical debate of whether semantics should be distinguished as a separate linguistic level from pragmatics. Rather I would like to consider how semantic and pragmatic rules might interact.

Jackendoff does admit, "If there is a distinction between semantic and pragmatic rules, then, it lies only in the formal manipulations the rules perform on conceptual structure" (ibid.). To better understand what this might refer to, it is worth noting how Lerdahl and Jackendoff (1983) developed the notion of preference rule systems as a way of clarifying how we understand (i.e. process) music. They demonstrate that some preference rules for determining well-formed musical groupings are local in nature, relating to small groups of adjacent notes and rests. Others function globally by determining a preferred grouping structure for a collection of smaller, "low level" groups, and so can function to reduce ambiguity due to a conflict between two local rules. The global rules lead to the placement or suppression of larger grouping boundaries.

Jackendoff (1983) hints that a similar hierarchy of preference rules may be in effect in semantics. For example in the sentence,

The horse raced past the barn fell.

local cues reinforce the reading of raced as the main verb, and only at the global, sentence level, where the need to integrate fell is introduced, does the less stable participial interpretation of raced come to the fore as the preferred reading (ibid., 155). Re-

turning to the pragmatic rules discussed in section 2.3, they too act as preference rules of a global nature. However unlike the type of global rule discussed above, which determines a preferred structure for the semantic consistency of the sentence as a whole, the pragmatic rules call for internal consistency within the discourse situation as a whole. For example, in normal discourse if you made reference to a man you saw on the bus as you were on your way home today, at least two interpretations would be conceivable based on two possible schematizations of the bus: as a means of transportation (in which case the man was a passenger), or as a "container" (in which case he was on top of the bus). Any sense of ambiguity is normally dispelled by invoking the global preference for the interpretation which implies that the two objects are interacting according to their normal function (pragmatic preference rule (2.20a) in section 2.3.3.1), thus reducing the likelihood of the second option above. (Such usage is discussed further in section 3.1.3 below.)

The semantic conditions and selection restrictions, then, function as preference rules which determine the well-formedness of conceptual structure at the local level, determining preferred grouping structures for neighboring conceptual constituents. The pragmatic preference rules function on the global level, determing if the conceptual structures are well-formed in terms of being concordant with specific knowledge of the social circumstances of the discourse situation and with general knowledge of the world. In the sense that semantic and pragmatic rules both act on conceptual structure, they do not require separate linguistic levels. However, the pragmatic rules do rely on different information than the semantic well-formedness rules: the pragmatic rules require access to information from the processes of inference and thought. In this sense the terminological distinction between the two types of rules remains a useful one.

Chapter 3
Place-functions and prepositions of direct location

It has been common in previous studies of spatial prepositions to make a distinction between those which express simple and relative position (Leech: 1969), direct and semi- or indirect location (Jessen: 1974; Sysak-Borońska: 1980), cospatiality and non-cospatiality (R soprostranstvennost', nesoprostranstvennost') (Vsevolodova: 1982), or topological and projective relations (Herskovits: 1986).

The prepositions expressing direct location to be discussed below share the topological concept of "continuity" (connectedness), that is, the spatial relation between SpE and L-r which they indicate involves direct contact between SpE and some part of L-r (Sysak-Borońska: 1980, 23).

The prepositions differ with respect to the specific part of L-r that is involved in a topological relation. The relation of contiguity with the surface of the localizer (as well as the physical relation of support) appears in on, and P/R na • L. Inclusion in the interior of the localizer, expressed by in, P w • L, and R v • L, reflects the relation of surrounding. The relation of coincidence with the whole localizer when it is conceived of as a point appears in at, while contact and juxtaposition with the periphery of L-r are expressed by P u • G, przy • L. R u • G on the other hand expresses proximity to the localizer.

3.1 Specific direct location

3.1.1 *Contact with surface*

The focus in this section is on the major exponents of this type of location, the prepositions on and P na / R na • L. Most semantic analyses of these three prepositions

emphasize two semantic factors -- contact between SpE and the surface of L-r, and the supporting function of this surface. Specifying "surface", however, misses a more general point that arises with the use of these prepositions. In reference to plane-like L-rs (e.g., the town square) the contact may be with the boundary of the L-r (its linear edge) rather than with the surface of the plane itself (the shop on the town square, in the sense of adjacent to it). The semantic condition then pertains to *contact with the boundary of L-r*[1] where *boundary* is understood as follows:

boundary of L-r that is schematized as a volume =

SURFACE, i.e. the periphery (in the mathematical sense);

boundary of L-r that is schematized as a plane =

LINE or edge, i.e. the perimeter.

As one might expect, the L-rs involved seem most often to be schematized as 3-D volumes rather than as 2-D planes, and the boundaries that are involved most often in the usage of on and R/P na are in fact surfaces rather than lines.

A third semantic condition to be introduced for these three prepositions (in addition to CONTACT and SUPPORT) is that of ATTACHMENT. Jackendoff (in progress) discusses how the verbs of attachment (such as to adhere, to stick) can be considered a marked subgroup of the verbs of touching (such as to touch, to hit); the latter imply contact, and the former imply attachment which implies contact. This subcategory of attachment as a kind of contact is also exhibited by some use types of these prepositions. ATTACHMENT will thus be adopted as a new type of semantic condition, a *dependent typicality condition*, one which *may* be present (to be represented as $ON_{+attach}$) if the condi-tion on which it depends (here, CONTACT) is also present. When attachment does not come into play, ON remains unmarked for attachment ($ON_{0\ attach}$, or simply ON).

The semantic conditions, then, common to the lexical entries for each of on and

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[1] I am grateful to Ray Jackendoff (personal communication) for this observation.

P na/ R na + L are as follows:

$$\begin{array}{l} \text{SpE } \underline{\text{on}}\ \text{L-r:} \\ \text{P SpE } \underline{\text{na}}\ \text{L-r + L:} \\ \text{R SpE } \underline{\text{na}}\ \text{L-r + L:} \end{array} \left[\begin{array}{l} \text{SpE CONTACT WITH BOUNDARY OF L-r (Typicality)} \\ \quad \Rightarrow \text{ATTACHMENT (Dependent typicality)} \\ \text{L-r SUPPORT SpE (Typicality)} \end{array}\right].$$

Adapting Herskovits' (1986, 140) explanation of support to the notation of the present framework, an object is "supported" by another if its weight is perceived to press or pull upon it; the "supporting object" then "resists" the push or pull. I treat CONTACT WITH BOUNDARY and SUPPORT as typicality conditions; neither one is necessary for a determination of the use of on *et al.*, but a judgment of the applicability of at least one is sufficient for on *et al.* to be appropriate. The emphasis may shift to one or the other component of meaning depending on the situation and pragmatic context. Sysak-Boronska (1980) cites the following examples which make this point clear. First, where support is most salient:

(3.1) a towel on a hook: P ręcznik na haczyku.

In most contexts with on and R/P na, the support involved is against the force of gravity, and as a result the support is usually provided by an uppermost surface of the L-r. When an upper surface is not involved, the possibility of attachment resulting from contact becomes more relevant. In the following example, support can even be viewed as redundant:

(3.2) a fly on the ceiling: P mucha na suficie;

and in the following example, support is irrelevant.

(3.3) two words on a page: P dwa słowa na stronie.

I will now turn to different use types of these prepositions.

- "SpE supported by L-r" $\quad [_{\text{Place}}\ \begin{matrix}\text{P NA}\\ \text{ON}\\ \text{R NA}\end{matrix}\ ([_{\text{Thing}}\ \text{SUPPORTING SURFACE}])]$

This type is exemplified in (3.1):

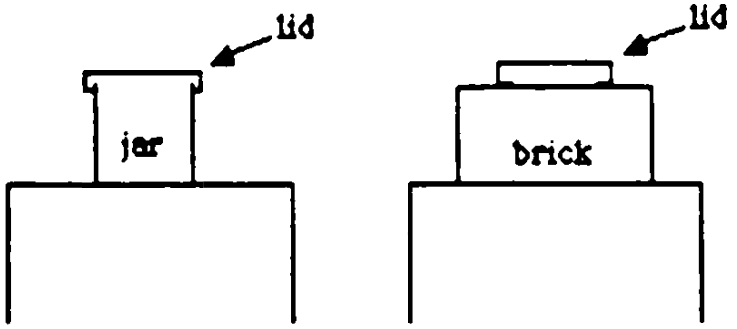
a towel on a hook: P ręcznik na haczyku: R polotence na kriučke.

The Localizer may be conceptualized as a surface by approximation, even if it bears depths and irregularities, provided these are of a small enough relative magnitude so as to allow them to be abstracted away (cf. Herskovits: 1982, 187), as in:

(3.4) the cat on the grass: P kot na trawie: R kot na trave.

Herskovits makes an insightful analysis of situations involving indirect support, which I will summarize below. By "indirect support" I am referring to cases where one object supports another, but the two are separated by other objects and so are not contiguous. Whether on (and P na/ R na • L) is acceptable in such cases is a matter of the relevance and salience of the objects involved. Herskovits (1986, 142-43) cites the following examples:

(3.5)



a.) *The lid is on the table. b.) The lid is on the table.

Despite the fact that in (3.5) a., and b. the lid is separated from the table by "the same" distance, one is still unlikely to say in a. that it is on the table. The pragmatic preference rule (2.20a) helps explain the difference in usage. The relation between the lid and its jar typically matters, and so the preferred expression is one which expresses this interaction according to their normal function (The lid is on the jar). The relations between the lid and the brick are not salient in the same manner.

This also provides an explanation for the acceptability of the sentence

The lamp is on the floor

when in fact there is a rug between the two (call this situation A), and the unaccept-

ability of it when in fact the lamp is on a table on the floor (situation B). Miller and Johnson-Laird (1976, 387) feel that this example shows that on can be used when speaking about something in the "region of interaction" with the surface rather than merely in contact with the surface itself. Perhaps the factors of a table's usual size and salience provide a better reason for the unacceptability of The lamp is on the floor in situation B, the preferred expression obviously being The lamp is on the table.

- "SpE contiguous with L-r" $[_{Place}\ \begin{matrix}P\ NA\\ ON\\ R\ NA\end{matrix}\ ([_{Thing}\ \begin{matrix}SURFACE\\ LINE\end{matrix}\ ])]$

In examples of this type, the condition of SUPPORT is less relevant or irrelevant:

(3.6) a spot on the blouse: P plama na bluzce: R piatno na bluzke

He had a birthmark on his forehead.: P Miał na czole znamie.:
R U nego na lbu bylo rodimoe piatno.

I held my hands on his shoulders: P Trzymałem ręce na jego plecach:
R Ja derżal ruki na jego plećakh

Support is also irrelevant in cases where the L-r is a line:

(3.7) a point on the line: P punkt na prostej: R punkt na priamoi

Is Lima on the equator?: P Czy Lima jest na równiku?: R Lima - na èkvatore?

a village on the border: P wieś na granicy: R derevnja na granice

Herskovits (1986, 141-42) notes the difference when the condition of support *is* relevant. In the examples

(3.8) The balance beam rests on a knife edge.

A gnat lighted on the the tip of the pencil.

"the tip of the pencil and the knife edge are not conceived respectively as a geometric point and a line, but as offering a very small or thin surface for support."

We will see in 3.2.1 that when L-r is conceptualized as a point, English uses the preposition at.

- "SpE attached to L-r" $[_{Place}\ \begin{matrix}P\ NA_{+attach}\\ ON_{+attach}\\ R\ NA_{+attach}\end{matrix}\ ([_{Thing}\ ])]$

If the supporting surface is the upper surface, the contact is normally maintained by gravity; if contiguity is not with a free upward facing surface of an object, contact may not be maintained by gravity alone, but by attachment:

(3.9) the fly on the ceiling: P mucha na suficie: R mukha na potolke;

the map on the wall: P mapa na ścianie: R karta na stene.

In the following examples, support is less relevant or irrelevant in light of the relationship of attachment:

(3.10) the pears on the branch: P gruszki na gałęzi: R grushi na vetke

a dog on a leash: P pies na łańcuchu: R sobaka na cepi

Another reading of the sentences is conceivable in which the pears were resting against a branch on the ground, and the dog was standing on a leash, but this is not the usual interpretation of these constructions. The other reading is in fact that of the first use type discussed above, and the fact that these constructions can be characterized (schematized) according to the first use type (involving a SUPPORTING SURFACE) or the present type accounts for their possible (though unlikely) ambiguity. The preferred reading is the one entailing attachment; the fact that a dog is standing on its leash is rarely a relevant one, whereas the functional relationship of whether a dog is attached to a leash or not usually is more relevant. When an expression of this use type is used, the "search" for relevance that the speaker is conveying draws on our world knowledge beyond that of simple location, to the relationship between such SpEs and L-rs as dogs and leashes, and the presence of the condition of ATTACHMENT is reinforced by the pragmatic preference rules (2.20) and (2.20a): the preferred expression is one that is maximally relevant and implies the objects' functional role.

Polish does not always express this use type with na + L:

(3.11) the handle on the suitcase: P raczka u walizki: R ručka na čemodane

the buttons on the shirt: P guziki przy koszuli: R pugovicy na rubaške.

This usage of P u + G /przy + L will be discussed further in 3.1.4.

- "SpE attached to Localizer perimeter" $[_{Thing}\ ATTACHED]_{SpE}\ [_{Place}\ \begin{matrix}P\ NA_{+attach}\\ ON_{+attach}\\ R\ NA_{+attach}\end{matrix}\ ([_{Thing}\ PLANE]_{L\text{-}r})]$

The localizers used in this use type fall into the categories of open spaces, bodies of water, and various pathways. The are schematized as planes, and so the boundary involved is the outer edge, the perimeter.

(3.12)

the shop on the town square: P sklep na/przy placu miejskim:
R magazin na gorodskoi ploščadi;

The theater is on this street: P Teatr jest na tej ulicy: R Teatr na ėtoi ulice;

Warsaw is located on the Vistula: P Warszawa leży nad Wisłą:
R Varšava raspoložena na Visle.

The fact that this use type entails a particular kind of schematization of the L-r different from that seen in the other use types mentioned can be seen as follows.

(3.13) the house on the river

is not understood the same as

(3.14) the canoe on the river

since the former is usually understood as meaning by the river. Miller and Johnson-Laird (1976, 386) attribute this to the ambiguity of the nature of the localizers in this use type, which they refer to as "paths": they "can be thought of as surfaces along which traffic can pass or as edges marking the boundary of something." There is no confusion when on is used with localizer-*surfaces* or when by is used with *edges*, but ambiguity arises when the L-r can be conceptualized as a (supporting) *surface* or as an *edge* forming a kind of boundary. The SpE must also be perceivable as *large* and *attached* in this use type (Herskovits: 1986, 148).

*the car on the lake: P *samochód na jeziorze: R *mašina na ozere

are thus not feasible in this use type of contiguity with the L-r edge.

Sentences (3.13) and (3.14) also exemplify the different interplay of preference rules to express different situations. Whereas in (3.13) the condition of SUPPORT bears less weight, in (3.14) both conditions bear fairly equal weight. Similarly, there are the two different readings of the newsstand on Harvard Square. Particularly when on is emphasized, both of the conditions SUPPORT and CONTACT are understood to come into play. Otherwise the sentence may be understood in terms of the present use type, in reference to the perimeter of the 2-D Localizer.

The Polish and Russian exponents of this use type other than na • L (i.e. Polish przy • L, nad • I, and occasionally Russian u • G) will be discussed under PERIPHERY, section 3.1.4.

- "SpE transported by L-r-vehicle"

This use type, exemplified in English by

the children on the bus, the luggage is still on the plane

will be discussed in 3.1.3.

3.1.2 *Inclusion in Interior*

This section focuses on the prepositions in and P w/R v • L. They share a semantic condition that in some analyses is simply characterized as the meaning "interior", and in others as a relation to the interior. The meaning adopted below was influenced by Jessens's (1974) meaning for in, and Sysak-Borońska's (1980) for in and P w • L.

SpE in L-r:
P SpE w L-r • L: [SpE INTERSECT INTERIOR OF L-r (Nec)].
R SpE v L-r • L:

The term INTERSECT is understood here in the mathematical sense; the relation that this set of prepositions points to is that SpE and L-r share a common set of points. The term is meant to embrace such ideas presented in previous studies as "part of interior" (Talmy: 1983) and "inclusion" (Herskovits: 1986).

As we will see in this and in the following section, many factors can play a role

in determining what an "interior" is, and these factors are not always the same for each language.

- "SpE in L-r-container" $[_{Place}\ \begin{matrix}P\ W\\IN\\R\ V\end{matrix}\ ([_{Thing}\ CONTAINER])]$

The most stereotypical instances of this use type involve the complete enclosure of SpE by L-r:

(3.15) the jam in the jar: P dżem w słoiku: R dżem v banke

This is obviously not always the case. Most often the "interior" is not surrounded on all sides by physical boundaries. Herskovits (1986, 149-150) indicates the range of possible container types (with examples in English). The container may be cup-like:

(3.16) the milk in the glass: P mleko w szklance: R moloko v stakane.

It may be tube-like:

(3.17) in an underpass: P w przejściu podziemnym: R v podzemnom perekhode.

It may be comprised of two surfaces or lines meeting at an angle:

(3.18) the chair in the corner of the room: P krzesło w rogu pokoju:
R kreslo v uglu komnaty.

The lack of completely enclosing physical boundaries with many types of "containers" proves problematic for a semantic analysis of in or w/v + L that calls for such boundaries as a necessary and sufficient condition for the use of these prepositions. Conceptual semantics, however, recognizes "boundaries" that are not always physically present or visible, but which the speaker may conceptualize and project on the object. In (3.16) and (3.17) it is easy to imagine a plane (or planes) going across the open end(s) of the containers in question.

But the limits of the projected boundary are not always so clear. Consider example (3.18). Here the determination of a containing boundary in the corner seems to be

a graded judgment depending on the relative distance from the line where the walls meet, and, as Herskovits suggests, on context (the size of SpE and of the room, the presence of other objects in the corner area). Herskovits (1986, 152) points out other cases in English in which a boundary is projected onto a volume. The Slavic counterparts of in reflect the same schematizations:

There is a chair in the middle of the room: P W środku pokoju stoi krzesło:
R V seredine komnaty - kreslo.

They sat in the shade of a tree: P Siedzieli w cieniu drzewa:
R Oni sideli v teni dereva.

An outline projected around some entity may also constitute a boundary that determines an interior. This may apply to a single object, e.g.,

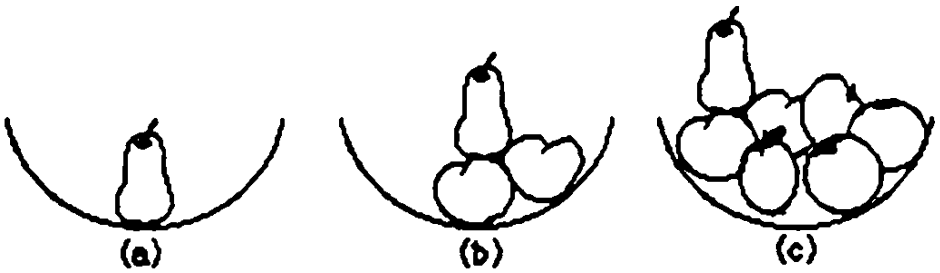
the bird in the tree: P ptak w drzewie: R ptica v dereve

in which the outline encompasses the tree trunk, branches, and leaves (the normally visible part of a tree that constitutes a "tree"). The outline may also surround a collection of objects, as in

He held a pipe in his teeth while he talked: P Trzymał fajke w zebach podczas gdy mówił:
R On derżal trubku v zubakh, poka on govoril.

Consider also the following examples from Herskovits (1986, 44).

(3.19)



(a) (b) (c)

the pear in the bowl

She notes here that, "The distinction between situations (a), (b), and (c) - as regards the location of the pear - are generally overlooked. In is the best choice, given the range of lexical possibilities." This points again to the important role played by relevance and function in selecting/interpreting a spatial expression. The preferred expression here is one which points out the functional relation between the pear and the bowl: the

inclusion in a volume of objects that the bowl contains rather than something like the pear is just above the rim of the bowl, which is normally a less useful fact about the location.

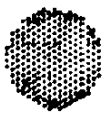
There is less agreement between English and Polish/Russian as to what the interior of a flat area ("two-dimensional L-r") is as opposed to the interior of a volume ("three-dimensional L-r"). This becomes apparent in Sysak-Borońska's (1980, 54-63) insightful comparison of which prepositions in English and Polish (in vs. w or na + L) are usually used in reference to co-location with the interior region of surfaces. Upon consideration of a multitude of examples, she divides the L-r-surfaces into three types for further discussion with a schematic drawing to represent each type. The types coincidentally represent different points on what Zubin and Svorou (1984) call the Boundedness Continuum used in their study of spatial adjectives in Modern Greek.

First there are flat, frame-like localizers. An object of this type is either composed of non-material space surrounded by a material boundary (e.g., a doorway), or is a border itself for a flat area (e.g., a frame). In either case, the frame-like boundary is salient. Such a L-r is seen in the following examples, and can be represented with the figure below.

(3.20) 

in a frame: P w ramie
in the doorway: P w drzwiach

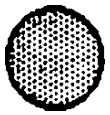
The other two types of localizers consist of flat areas. One type represents the opposite extreme from the frame-like L-r, namely a vast, flat area whose boundaries are imperceptible to the observer located on it. This can be represented by the following figure and example.

(3.21) 

two points lie in a plane:
P dwa punkty znajdują się na płaszczyźnie

Other flat areas represent a type between the above two extremes. Such areas may ac-

tually be surrounded by some kind of boundary, but it may not be obvious; one example would be a geographic surface that has boundaries which can be perceived, but which frequently are not salient to an observer located on the surface (Zubin and Svorou, p. 350):

(3.22) 

in the country: P w kraju
the group of women in the field: P grupe kobiet na/w polu
in the meadow: P na łące

Sysak-Borońska points out that whereas in English in may be used in all of these types, Polish admits w freely only with frame-like L-rs, as in (3.20):

(3.23) the flowers in the window: P kwiatki w oknach
a point in the triangle: P punkt w trójkącie.

While the type (3.21) is limited to use with na in Polish, type (3.22) fluctuates between the use of w and na depending on the L-r, with na predominating:

(3.24) the tent in the clearing: P namiot na polanie
graves in the cemetary: P mogiły na cmentarzu.

She observes that Polish seems to require a conspicuous boundary to determine the interior of a flat area and to allow w + L to be used (as in w kraju[1] as constrasted with the caravan in the desert: P karavan na pustyni). Sysak-Borońska offers this as an explanation for the use of P w with L-rs which are central components of larger entities: P w centrum miasta : downtown; w Małopolsce: in Little Poland (the region around Kraków, the former capital); w Śródmieściu: in the city-center. On the other hand, those L-rs which circle around the center take na (cf. the use type "SpE contiguous with L-r-edge"): na pograniczu: in the border area; na Żoliborzu: in Żoliborz (a district of northern Warsaw); na Śląsku: in Silesia (in Western Poland); na przedmieściach Paryża: in the suburbs of Paris. This usage is also apparent with on in English on the

[1]She notes the exception na Antarktydzie (in the Antarctic) can be attributed to this land's status as the most far-off, unexplored place.

outskirts of town.

In English, the interior may be defined not only by a boundary, but apparently also by the localizer itself: the region around the center of the total area may be interpreted as the interior, with a peripheral region surrounding it. Thus in English an interior may imply either the presence of a boundary or a periphery area. Sysak-Borońska notes that in English this is sometimes apparent in distinctive usages of in and on, in being used with larger surfaces where a "periphery" is more easily generated than in a smaller area where the surface and the contact with it will be more salient. Cf.

a caravan in the desert versus skaters on the skating rink.

In, then, has wider application in English than w + L does in Polish, which reflects the fact that in English an "interior" may be generated by a three dimensional L-r or by a two-dimensional L-r with a "boundary" or "periphery". In Polish an interior may also be generated by a three-dimensional L-r, but only in a "bounded" two-dimensional L-r. Some questions do remain, however, with these guidelines, such as why the following L-rs would be categorized as "bounded" in Polish:

P w tundrze: in the tundra; P w stepie: in the steppe.

Russian equivalents of the examples cited above show some differences in the usage of v/na + L from P w/na + L, namely the slightly wider applicability of R v than P w. The differences however are not nearly as widespread and systematic as those between the use of in and P w seen above. The categorization of L-rs in the following Russian examples coincides with that of Polish:

(3.20a) v rame, v dveri

(3.22a) v strane, gruppa ženščin v/na pole, na lugu

(3.23a) cvety v okne

(3.24a) palatka na poljane, mogily na kladbiščе.

The following show categorization in Russian more similar to that of English:

R v pustyne: in the desert: P na pustyni

R v prerijakh: in the prairie: P na prerii

(3.21a) R dva punkty nakhodiatsia v ploskosti: two points lie in a plane.

(The last example may be an instance of categorizing the plane as a "solid" in which the points are embedded --see below--, actually breaking the geometric rule of a plane as two-dimensional!)

Herskovits (1986, 153) cites examples from English which illustrate the fact that the use of in over on with surfaces is not just a matter of whether a border determining an interior/ exterior can be perceived, but sometimes whether *containment* is more relevant in the context involved than just *contact*.

> A line drawn on the top of a table is not in the top of the table, but a line drawn on a page might be in the margin, though it would be on the page, not in. ... The context surface must have at least two subareas, so one can contrast inclusion in one with inclusion in the other.

Thus the pragmatic preference rule of relevance (2.20) plays a global role in determining the choice in English between alternative schematization options (in vs. on). Slavic, however, does not allow for a different schematization of margins versus pages: in both cases the "boundary" is not conspicuous enough to allow for a relevant "interior". Each is categorized as a surface, which calls for na rather than v • L:

notes in the margin: P uwagi na marginesie: R zametki na poliakh.

One final example of the use type "containment" in English is

(3.25) There is a truck in the road.

I disagree with Herskovits' categorization of "physical object in a roadway" as a separate use type. She claims (1986, 154) that the fact that the truck in the example is understood to be an obstacle is not inferable from the fact of its location and our world knowledge of trucks and roads. Rather than considering this usage as an exception, I

would say the idea of "obstacle" is inferable from the application of the preference rule of relevance (2.20). The apprehension of the object (SpE) as an obstacle arises from the emphasis made by stating its *inclusion* in the area of the roadway. It is normally sufficient to identify a vehicle's location with on the road, and this usage is associated with the context of travel in English; note the idiom of a performing group being "on the road" to mean in the process of a performance tour. (Cf. the discussion of the use type for on "SpE transported by L-r-large vehicle" in the next section.) However, in the road, like in the margin of the page, points to inclusion in the given area[1] rather emphatically by identifying something different than the normal statement of the vehicle's location. Pragmatically the listener is forced to find the relevance of this usage, and thus focuses on the inclusion of the vehicle in the interior of the roadway space (a more logical alternative than to interpret in according to the use type of "embedding" as discussed below) but *not* in the context of travel; thus the vehicle is interpreted to be an obstacle. The vehicle is categorized the same as other potential obstacles, as in There's a dead deer in the road.

Polish and Russian do not use w/v + L in this situation, but rather na/na + L:

(3.25a) P ciężarówka na drodze: R gruzovik na doroge.

P droga and R doroga may not be categorized as a containing space. Note that w/v + L may be used with these nouns, however, to indicate a different categorization. P w drodze and R v doroge correspond to English on the road, on the way and reflect a categorization of the noun as a journey:

(3.26) P W drodze na nas napali rozbójnicy.: R V doroge na nas napali razboiniki.:
On the way we were attacked by bandits.

---

[1]The road may be categorized here as a two-dimensional area or alternately as including the space above it as a volume; "...it seems that the language user need not choose between the two interpretations, since as far as the canonical level is concerned, they do not conflict. It is as if they worked together in corroborating the canonical description" (Herskovits: 1986, 46).

- "SpE embedded in L-r-filled solid" $[_{Place}\ \overset{P\ W}{IN}\ ([_{Thing}\ FILLED\ SOLID])]$

In this use type, SpE is included in the normalized region defined by L-r, that is, in the part of space its shape would occupy prior to penetration (Herskovits: 1986, 150).

(3.27) the nail in the board: P gwóźdź w desce: R gvozd v doske

the spoon in the soup: P łyżka w zupie: R ložka v supe

The identity of this use type distinct from that of "containment" is clear in Sysak-Bońska's (1980, 51) example of the ambiguity in English and Polish of

(3.28) Did you find these nails in a tree trunk?:
P Czy znalazłeś te gwoździe w pniu drzewa?

in which the prepositions may be interpreted according to the type "containment" or "embedding" depending on whether the trunk is categorized as a *solid* or a hollow *container*. Similarly in Russian:

(3.28a) Ty našël èti gvozdi v stolbe dereva?

Herskovits also applies Lakoff's (1970) ambiguity test of conjunction and notes that in

There are nails and a hammer in the box.

the nails cannot be interpreted as being nailed into (embedded in) the box.[1]

The density of such filled solids varies, from a single object (as in the example above), to collections of objects as in the collective nouns, to liquids and gases:

in the sand, the forest, the air: P w piasku, w lesie, w powietrzu:
R v peske, v lesu, v vozdukhe.

Where the L-r is air (the bird in the air), a sense of height is understood. This is likely a result of the pragmatic preference rule (2.17): if the bird were *close* to the earth, a different L-r would generally be cited to locate it more directly.

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[1]Weinsberg (1973) supports the distinctiveness of these two use types with evidence from non-Indo-European languages; he cites that eleven East Caucasian languages distinguish "containment" from "embedding" with separate linguistic forms.

• "SpE-(a part) included in L-r-the whole" $[_{Thing}\ PART]_{SpE}, [_{Place}\ \overset{P\ W}{\underset{R\ V}{IN}}([_{Thing}\ WHOLE]_{L\text{-}r})]$

This use type is similar to the previous one in that the inclusion involved is that of SpE embedded in L-r, but in this type SpE and L-r are perceived as habitually connected in a part-whole relationship. The part-whole relations concerned are of the "component-integral object" type (as per the classification of such relations by Winston, Chaffin, and Herrmann: 1987).

(3.29) a page in a book: P strona w książce: R list v knige

the muscles in his legs: P muskuły w jego nogach: R myšcy v ego nogakh

The part-whole relationship is not always expressed with in/w/v + L but is sometimes lexicalized differently. It seems that Polish and Russian use of w/v + L is more wide spread for this relationship than in is in English. Cf.:

(3.30) P Dach w oborze przecieka.: R Kryša v korovnike protekaet.

P Rama w tym lustrze jest poszczerbiona.: R Rama v étom zerkale - otbitaja.

versus English

(3.30a) The cowshed roof is leaking. The frame of the mirror is chipped.

As this shows, the spatial preposition can often be replaced by a non-spatial expression while the part-whole meaning is retained:

This book has over 100 pages.: P Ta książka ma ponad 100 stron.:
R Eta kniga imeet bolee 100 stranic.

Compound nouns (cowshed roof), the use of the genitive (frame of the mirror), and of the verb "to have" indicate that we are dealing with the "possessive" semantic field rather than the "spatial".

Herskovits (1986, 152), considering the use type in spatial terms, claims that in English the part (SpE) must be perceived as surrounded by the rest of the object (L-r), thus the unacceptability of

*the leg in the table.

This would seem to apply in Slavic as well:

P *noga w stole: R *noga v stole.

However Sysak-Borońska (1980, 152) points out that in Polish the use of w + L is acceptable in reference to a definite L-r:

P Nogi w tym krześle się chwieją.: The legs of that chair are wobbly.

P Drzwi w naszej szafie skrzypią.: Our wardrobe door squeaks.

Similarly acceptable in R: Nogi v ètom kresle šatajutsja. Dver' v našem škafu skripit. Rather than reflecting a difference in spatial perception in the three languages, this usage seems rather to reflect the different possibilities for lexicalization in the possessional semantic field. English has the possibility of forming compounds such as wardrobe door or the genitive legs of that chair, which are more appropriate for possession than in is. Such adjective-noun combinations appear less often in Slavic than in English (P *nasze szafne drzwi, R *naša škafnaja dver'). In Polish and Russian the genitive (dver' škafa) as well as w/v + L are viable options for expressing part/whole relations, although the genitive is usually restricted to reference to alienable possession (cf. R Eto kniga Ivana.) rather than to inalienable possession as represented in part-whole relations.

• "SpE-person in L-r-institution" $[_{Thing}\ \text{HUMAN}]_{SpE}\ [_{Place}\ \overset{P\ W}{\underset{R\ V}{\text{IN}}}\ ([_{Thing}\ \text{INSTITUTION}]_{L\text{-}r})]$

When schools, hospitals, churches, and the like are perceived as the buildings per se, and inclusion in the interior of them is being referred to, they fall under the use type of containment:

the cells in the jail: P cele w więzieniu: R kamery v tjur'me

all the children were in the school: P wszystkie dzieci były w szkole:
R vse deti byli v škole.

But there is also the following usage, marked syntactically in English by the lack of the article in the prepositional object:

(3.31) the man in jail (P człowiek w więzieniu: R čelovek v tjur'me)

Are your children at home now?: (P Czy dzieci są teraz w domu?: R Vaši deti sejčas doma?
No, they're in school. Nie, są w szkole. Net, oni v škole.)

This usage is associated with the abstract institution which has a certain function rather than with the building with which the institution is associated. Thus the children in school may be in the adjoining playground or even on a class trip. Their physical presence in the building is not necessary at the time of speech. The sentences

My daughter is in/at the university: R Moja doč v universitete.

provide an example in which this use type is the only possibility, unless the university consists of one building. Note that in Polish one says *na* uniwersytecie. This use of na in Polish, and its relationship to English at will be discussed in section 3.2 under "General direct location".

The words university and also hospital actually constitute exceptions in American English to the syntactic marking of this use type through the absence of an article, e.g.:

My son is in the hospital.

In British English, however, the accepted expression is in hospital, and in American English one often refers to an undergraduate as being in college.

• "SpE-person in L-r-clothing" $[_{Thing}\ \text{HUMAN}]_{SpE}\ [_{Place}\ \begin{matrix}P\\R\end{matrix}\ \begin{matrix}W\\V\end{matrix}\ \text{IN}\ ([_{Thing}\ \text{CLOTHING}]_{L\text{-}r})]$

This type is used to varying degrees in the three languages in reference to a person wearing a certain article of clothing as in

(3.32) the woman in the big hat: P kobieta w dużym kapeluszu:
R ženščina v bol'šoj šljape

the man in the blue suit: P człowiek w granatowym garniturze:
R čelovek v sinem kostjume

In Polish and Russian it is also common in the predicate position, but this is less com-

mon in English:

to wear glasses: P nosić okulary or chodzić w okularach:
R nosit' očki or khodit' v očkakh.

This use type is distinguished by the fact that the normal Figure/Ground relationship is inverted (Herskovits: 1986, 153). An article of clothing serves as a poor Ground since it is relatively small and easily moveable. Closer inspection reveals that this type is not used as a means of indicating the location of SpE (it does not answer "Where?"). Rather, it is an application of the preposition in a semantic field other than the spatial, namely what Jackendoff (1978, 221) calls the Identificational semantic field (cf. section 5.2.2), and as such is used to identify a property of SpE. Thus a PP of this use type occurs more commonly in phrases modifying some noun (e.g., The man in the blue suit looks very suspicious) than around a copulative verb as is common with phrases of Location (e.g., ?The man is in the blue suit). The role of this use type in the Identificational semantic field also supports the fact that a more specific or unusual item of clothing makes a better L-r than a more generic one, cf. *?She was in a hat versus the more acceptable She was in a pillbox hat.

3.1.3 *Overlap of in, on, P w/ R v • L, P na/ R na • L*

With many nouns, particularly with proper nouns as place names, the question of whether they are used with in/w/v or on/na/na is determined by linguistic convention, i.e. under which geometric schematizations the given language allows a given L-r to be categorized. As the examples for figure (3.22) show, the areas English categorizes as subdivisions of land:

to walk in the cemetary, in the meadow

are not categorized as such in Polish and Russian, but rather as land surfaces:

P chodzić na cmentarzu, na łące: R khodit' na kladbišče, na lugu.

This section will include a discussion of cases in which the use of translation

equivalents differs according to 1) set, language-specific phraseology, 2) language-specific, alternate schematizations of a situation that may be possible, and 3) a combination of these factors (specifically in the case of reference to vehicles in the three languages).

• "Frozen", language-dependent categorizations of L-rs

This fact that different languages require different categorization of certain objects results in classic textbook "exceptions", here for the use of P/R na rather than P w / R v as English in. Below are some representative examples of the phenomenon.

Many islands that are linguistically categorized as unbounded surfaces in P and R and are used with na are categorized as surfaces in English with an "interior" region and are used with in.

(3.33) P Mieszkaja na Kubie: R Oni živut na Kube: They live in Cuba.
P ...na Ceilonie: R ...na Ceilone: ...in Ceylon
P ...na Filipinach: R ...na Filippinakh: ...in the Philippines
P ...na Wyspach Brytyiskich: R ...na Britanskikh ostrovakh. ...in the British Isles

Similarly, some mountain ranges, which Polish and Russian categorize as mountainous areas:

(3.34) P ...na Uralu: R ...na Uralie: ...in the Urals
P ...na Kaukazie: R ...na Kavkaze: ...in the Caucasus.

Polish shows a somewhat greater tendency to characterize lands with na than does Russian.

(3.35) P ...na Białorusi: R ...v Belorusii (but na Rusi): ...in Bielorussia
P ...na Litwie: R ...v Litve: ...in Lithuania
P ...na Syberii: R ...v Sibiri: ...in Siberia
P ...na Węgrzech: R ...v Vengrii: ...in Hungary

In Russian, however, one does say na Ukraine (in the Ukraine). This usage is assumed to have arisen from the influence of the Ukrainian use of na, and is tied etymologically to the Russian expression na okraine (in the outlying districts) (Astafjeva: 1974, 29). Similarly Polish has na Ukrainie.

The use of P/R na corresponding to English in to express general location is not limited to proper nouns as place names. Consider reference to academic institutions. Whereas one language may associate the institution or its parts with the building(s) involved (with the use of w/v), the other may consider the same L-r as a more abstract area without a differentiated "interior" (with na).

(3.36) P Wczoraj byłem na uniwersytecie: R Včera ja byl v universitete:
Yesterday I was at the university

P ...na uczelni: R ...v vuze: ...in school
P ...w katedrze: R ...na kafedre: ...in the department

A "department" is not always associated with its concrete location, and both P and R use na with the following terms:

P ...na wydziale: R ...na fakultete: ...in the department.

English retains in in the last two examples, perhaps reflecting the contrast of containment in one area and not in another (cf. the example in the margin in 3.1.2). The examples with at reflect general direct location in English (discussed in section 3.2)

Astafjeva (1974, 28) cites the historical basis of using na with Russian počta (to mean at the post office). The noun was borrowed from Polish poczta, which came from Italian posta, a stop or station where the horses were changed. The word apparently retained this meaning for some time in Russia, and so na referred to location in this area rather than in a specific building as it does now in P na poczcie/ R na počte. Klemensiewicz (1951) and Sysak-Bonońska (1980) point out that nowadays Localizers used with P na often refer to a scattered area with several functions (as opposed to a simple building better categorized according to its containing function). They note the diversified function of (Polish) post offices which have at least three departments: telegraphic, for the collection and distribution of mail, and for money matters. Many also have a separate parcel post section. (Polish) railroad stations normally include ticket windows, a waiting room, restaurant, bar, and underground passages; location in this complex area is expressed na dworcu (kolejowym). These institutions are similarly

complex in other European countries, and not surprisingly one also says in Russian na vokzale (in/at the (train) station). Similarly,

P na lotnisku: R v aèroportu (based on v portu): at the airport
but R na aèrodrome.

• Perceptually determined categorizations of L-rs

As stated, the above examples illustrate the use of w/v, na/na, in and at to indicate general location. The L-rs involved rarely lend themselves to a contrastive use of these prepositions for indicating different types of direct location. For example, whereas it is easy to imagine contexts in which the phrases

(3.37) P na Syberii or R v Sibirii or in Siberia

are appropriate (e.g., They live...), it is much more difficult to find appropriate contexts for

(3.38) P w Syberii or R na Sibirii or on Siberia,

in which the preposition reflects the less orthodox schematization for each language of the L-r "Siberia".

Other L-rs do lend themselves to this contrastive type of categorization. In some studies, the different meanings attributed to in and on make the two appear as opposites or as having a complementary distribution of usage. Cf. Leech's (1969)

on -> PLACE [2 DIMENSION], in -> PLACE [3 DIMENSION],

or Bennett's (1975)

on: locative surface, in: locative interior.

Others, however, have recognized the indeterminacy of the boundaries between the usage of the two prepositions and their common equivalents[1] in other languages. Sysak-Borońska (1980, 44) comments that, obviously, real objects are volumes which always have a thickness or depth. "Our perception is such, however, that when we see

[1]Henceforth "common equivalents" will refer to the common translation equivalents of the prepositions at hand in other languages.

and touch objects we encounter only the surfaces which delimit them. Out of this conflict between reality and our senses there arises the indeterminacy of threshold between the rules of application of in/w and on/na." Echoing the principles of Conceptual Semantics (section 1.4) she notes (p. 45) that one must look "to the concepts formed in the language user's mind" to determine which categorizations are permissable for these L-rs.

The problem is most salient with hollow solids, the container-like interiors of which are defined by one or several surfaces. Such objects present a striking example of how surface and interior need not be mutually exclusive. The man on the bus could be on the upper or inner, floor surface of the bus depending on context. In the latter case, he could also be described as being in the bus, depending on context; one expression focuses on the contact with the surface and its implications (to be discussed below) while the other focuses on inclusion in the interior of the bus.

Some languages permit these alternate points of observation (schematizations) with different objects more so than others. English in the (lecture) hall may be expressed in Polish as w sali or na sali, though English does not allow *on the (lecture) hall. The example

(3.39) P W sali było dużo osób.: There were a lot of people in the hall.

refers to the whole, undifferentiated interior of the hall, whereas

(3.40) P znaleźć się na sali, wśród tłumu:
to be in the hall (the audience), amongst the crowd

focuses on the floor area and ignores the stage or podium area (Klebanowska: 1971, 19). "The point of observation becomes transferred from outside the localizer to its inside so that the enclosing, encircling aspect of a localizer recedes to the background and is suppressed instead by its other salient features, that of relative flatness and vastness of one of its interior surfaces" (Sysak-Borońska: 1980, 76-77). Klemensiewicz (1951) refers

to it as the "space widening function" of Polish na[1] and its usage in colloquial Polish seems to be growing (Sysak-Borońska: 1980, 76). Klebanowska (1970, 20) notes that for some Poles, na kościele indicates location in the floor area of the church, ignoring the altar and choir, as opposed to w kościele, meaning in/at the church as an undifferentiated whole. Other examples in Polish (from Klemensiewicz) include:

(3.41) w zamku: in the palace (in the building), versus
na zamku: at the palace (on the palace grounds);

w kopalni: in the mine (in the underground shaft), versus
na kopalni: at the mine (including the above-ground buildings, offices, etc.).

Similarly w fabryce: in (at) the factory refers most often to the undifferentiated interior, while na fabryce (at the factory) may refer to the whole factory territory (though many Poles would consider it a Russicism from R na fabrike). Use of on in such expressions in English is rare,[2] at being more common to express general direct location (see 3.2.1).

R na is sometimes used similarly to P na for this distinction, but with fewer L-rs than in Polish:

(3.42) R v vozdukhe: P w powietrzu: in the air,

versus R na vozdukhe: P na powietrzu: in the open, outdoors.

Astafjeva (1974, 28) also attributes different senses to the alternate usages R v/ na kukhne: in the kitchen, v reflecting the kitchen as one of several rooms, na reflecting kukhnia as the territory where the stove and necessary cooking utensils are (similar to the contrast of "building" versus "institution" seen earlier).

The usage of different prepositions can reflect not only different schematizations of a given object, but also different objects that are expressed by the same noun,

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[1] "funkcja rozszerania pola mieisca"

[2] When on is used this way, the L-r is usually the floor itself: in a retail store an employee might say a salesman is working on the floor (of the store) to indicate he is in the front part of the store with the customers rather than back in the stockroom or office.

e.g.

(3.43) R vo dvore: P w podwórku: in the courtyard

but R na dvore: P na dworze: outside, outdoors;

P we wsi: R v derevne, v sele: in the village

versus P na wsi: R v derevne: in the country(side).

Astafjeva (1974, 27) notes that the constructions na derevne, na sele are also gaining currency in colloquial Russian speech.

• Vehicles

This shifting of perspective can also be seen in reference to large vehicles in English. On one hand, in English, as in the two Slavic languages under consideration, a vehicle can be viewed as a container, often as the location of some event, process, or state.

(3.44) It was so hot in the bus.: P W autobusie było tak gorąco.:
R V avtobuse bylo tak žarko.

But in English the use type of on "SpE transported by L-r-large vehicle" expresses a different perspective of the scene in which the supporting surface in it (the floor or seats) is the more salient aspect of the scene.

The vehicle must be "large" in order to have a relatively large surface or floor that supports the travellers[1]:

(3.45) the children on the bus; We saw a lot of policemen on the subway.

Among "large" vehicles in English are boats, buses, trains, subways, and planes. There does not, however, seem to be a separate use type for reference to transport by small vehicles. In a "small" vehicle, the surrounding becomes more salient, and on is less acceptable (Herskovits: 1986, 144).

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[1]Talmy (1983, 267) points out the historical appropriateness of viewing larger vehicles as platforms since this schematization was originally applied to topless carts and stages, "but has since frozen into a fixed image inflexibly imposed on the new subject."

(3.46) * We rode there on a taxi. * the fisherman on the canoe

With these vehicles, on is restricted to reference to the object simply as a supporting surface, e.g., He was sitting on an upturned canoe. In is retained for reference to smaller vehicles. This can include the cab of a truck:

We talked a lot in the truck on the way here

as opposed to the bed of a truck (particularly for a truck with an open back, such as a pick-up truck):

Look at all the hay on that truck going by!

Among "small" vehicles in English, then, are trucks (referring to the cab), cars (including taxis), and small boats (canoes). Other means of transportation such as bicycles, skateboards, or surf boards are not at issue here since they can not be conceptualized as CONTAINERS as well as VEHICLES: one cannot be in them. They are limited to the conceptualization SUPPORTING SURFACE.

"Transport" refers to the additional entailment of a context of travel in this use type, even if the vehicle is not moving at the particular moment that the sentence applies. In

The luggage is still on the plane,

we understand that perhaps the plane just completed a trip and the passengers have deboarded. Fillmore (1983, 319) points out the importance of this factor with the example

(3.47) The children were playing in an abandoned bus in a field,

where on would not be appropriate in this sense of this use type, but could only mean on top of the bus. Another way of putting it is that this use type entails the conceptualization of the vehicle as a carrier (cf. the preceding footnote citing Talmy). Therefore reference to the passengers on the bus is more acceptable than reference to ?the driver on the bus; the driver is not just in an object-carrier relation to the vehicle, but is in control of the vehicle. The pragmatic factor of the driver's functional relation to

the vehicle usually outweighs his/her additional role as one of the objects being carried.

Russian shows a similar use type for na + L, but it is not restricted to "large" vehicles, and thus could be characterized as "SpE transported by L-r-vehicle."

(3.45a) deti na avtobuse; My videli mnogo milicionerov na metro;

(3.46a) My ekhali tuda na taksi.

The distinctiveness of this use type from other use types for on/ R na + L such as "SpE supported by L-r" is visible in the two possible readings of

(3.48) Look at that man [going by us] on the bus!:

R Smotri na ėtogo čeloveka [proezžajuščego mimo nas] na avtobuse!

One reading reflects the "support" use type which refers to the external surface (see 3.1.1), the other reflects the more common use type in this context of "transport." The difference between the categorization of small vehicles in English and Russian is visible in

(3.49) R Smotri na ėtogo čeloveka [proiezžajuščego mimo nas] na mašine!

Look at that man [going by us] on the car!

Whereas in each language a reading of "support" is possible (where the man would be on top of the car), only in Russian is the "transport" reading also feasible; in English the sentence would not refer to a man using the car as a means of transportation in the normal way.

Although in (3.48) it is also possible to vascillate between the the "support" and "transport" readings of on/ na + L, the more pragmatically feasible "transport" reading is generally preferred.[1] The usage of preference rules in word meanings here reflects

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[1]Note the change in which reading is preferred in a context such as

Look at that bird on the bus!: R Smotri na ėtu ptiču na avtobuse!

in which our knowledge of the normal function and interaction of the things concerned (pragmatic preference rule 2.20a) puts greater weight on the "support" reading.

the intuitions about grouping preference rules for the circles in (2.10), with one grouping preferred (more strongly weighted) over another. This vascillation also occurs between the use types of "containment" with in/ v + L and "transport" with on/ R na + L, but here the two readings seem more equally weighted, and for most speakers are often interchangeable; both readings answer the question "where?", but from slightly different perspectives.

(3.50)

There were 40 passengers { on / in } the bus to Boston.

R Bylo 40 passažirov { na / v } avtobuse v Leningrad.

The situation is quite different in Polish where a separate use type for "transport" does not exist. W + L indicates "containment" in the vehicle (Żeberek: 1984a, 101), independent of its size, whether it is in the course of travel or not:

(3.50)a P Było 40 pasażerów w autobusie do Krakowa.

(3.45)a P Widzieliśmy wielu milicjantów w metrze.

Normally when P na + L is used with vehicles it means "on top of." In

(3.48a) P Patrz na tego człowieka na autobusie!

the man is understood to actually be on top of the bus. Wóz (a horse-drawn cart) presents a good example. Gypsies travelling by cart would be cyganie w wozie in Polish, whereas hay piled up "on top of" a cart would be siano na wozie (Klebanowska: 1971, 21).

The above use types refer to location, and statements with them can answer the question "where?". In addition, the use types (English) "transport by large vehicle" and (Russian) "transport", by describing a means of transportation, can sometimes answer "how?" as well.

(3.51) "How did you get home?" "On the bus."

R "A kak ty poekhal domoi?" "Na avtobuse."

The more common preposition in English for referring to manner of transportation, though, is by; in Polish it is the instrumental case; and in Russian it may be the instrumental case or na + L.

(3.52)

I went to New York {by train. / on the train.}

P Pojechałem do Nowego Jorku pociągiem.

R Ja poekhal v N'ju-Jork {na poezde. / poezdom.}

Here again English shows another instance of possible perspective vascillation: in this case, between on as "transport" and by as "means of transport". Such vascillation is less clear-cut in Russian, where, for the native speakers whom I questioned informally, na was generally preferred over the instrumental in reference to the means of transportation. The instrumental is considered stylistically marked in this context as somewhat poetic.[1] Thus for these Russian speakers, na covers both situations. With indeclinable nouns, of course, the instrumental case cannot be used, and so na is the only alternative to signal this function.

(3.53)

R Avtobusom vy doedete za 10 minut. (You can get there {by bus / on the bus} in 10 minutes.)

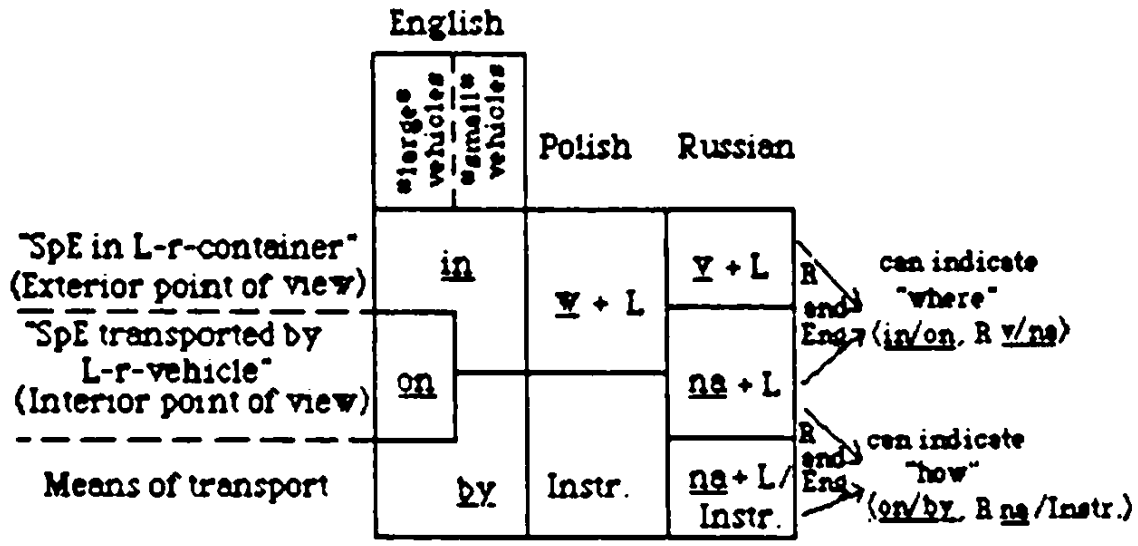
but

R {Na metro / Na taksi} vy doedete za 10 minut. (You can get there {by/on the subway / by/in a taxi} in 10 minutes.)

The chart in (3.54) sums up these use types across the three languages.

[1] E.g.: Korablem ne doekhat', samoletom ne doletet'.

(3.54)



Selection restrictions for "SpE transported by L-r-vehicle":

English: $[_{Place}$ON $([_{Thing}$ LARGE VEHICLE$])]$

Russian: $[_{Place}$NA $([_{Thing}$ VEHICLE$])]$

In English, reference to cars is complicated by the fact that a prepositional phrase (by car, in a/the car) is often not used at all, the verb drive and the verb phrases take the car, get a ride, which subsume the idea of "means of transportation" are most frequently used. For the sentences

R Ja poekhal v Niu-Jork na mašine. P Pojechałem do Nowego Jorku samochodem.

the English equivalents

I took the car to New York. I drove to New York.

or

I got a ride to New York.

seem more natural than

I went to New York { by car. / in the car.

• • •

The above material shows how the vascillation between usage of different prepositions reflects shifts of perspective (categorizations) of the object in question. The categorization may be conceptually determined by the speaker's point of view and by

what aspects of the L-r are relevant in that situation (e.g., P w/na sali); or it may be determined by the conventions of the language (of a certain dialectal or historical origin), normally giving the speaker little choice (e.g., P na Syberii but R v Sibiri). Similarly, the different use types mentioned in sections 3.1.1 and 3.1.2 depend on the relevant schematization of the spatial entities involved, with shifts from one type to another depending on different categorizations. This can certainly be likened to the different usages of aspectual forms of a verb, with the possible shift from one aspectual form to another depending on the speaker's point of view (R vid) of the action. Leech (1969, 162) comes to this very conclusion. Although his remarks refer to shifts between markings of one-, two-, or three-dimentionality on nouns and the use of at, on, in, we have seen that "aspectual" differences can be found between different use types of a single preposition as well

3.1.4 *Relations to the periphery: R u + G, and P przy + L and u + G*

The material covered in this section involves an area of complex overlap of translation equivalents in the three languages. It shows vividly how different languages can call for the selection of different aspects of a spatial situation to be expressed on the basis of which spatial prepositions are available to the speaker in each language. In brief, this section will focus on the following prepositions: P przy + L and u + G, which express relations of contact and juxtaposition with the boundary of the L-r; R u + G, which in general expresses a relation of juxtaposition with (proximity to) the L-r; and in English, although by is the only common translation equivalent which technically relates to proximity, at and on are also frequent translation equivalents of the prepositions in Polish and Russian mentioned above. As discussed in 3.1.1, on entails contact with a (supporting) boundary, usually a surface. The details of at will be discussed in 3.2; suffice it to say here that rather than expressing a relation strictly of proximity, at indicates the general co-location of SpE and L-r; in cases where L-r is an

"object of activity" (e.g., a desk, piano, stove), at also expresses the functional orientation of SpE toward that object.

-- R u • G --

As a starting point for this discussion, the semantic condition basic to the spatial use of R u • G is taken to be:

R SpE u L-r • G : [SpE JUXTAPOSED WITH L-r (centrality condition)].

JUXTAPOSITION is a centrality condition as its function is graded: the Russian preposition u becomes less applicable as the distance relative to the size of SpE and L-r increases.

The most common Polish translation equivalents of R u are przy • L and u • G. Przy • L is the more commonly used of the two counterparts to R u • G, with P u • G appearing in more restricted usages, often in set phrases, literary style, or archaisms. However a semantic difference between P przy and P u is also evident in addition to this stylistic difference. Consider the following examples:

(356) R u krovati : P przy łożku: at the side of the bed

R Ona stojala u okna: P Stała przy oknie: She stood by/at the window

R Stol stoit u steny: P Stół stoi przy ścianie: The table is by/next to the wall

R u avtostrady: P przy autostradzie: by the highway

R u izgolov'ia : P u wezgłowia: at the head of the bed

R meč u pojasa: P miecz u pasa: a sword at his waist

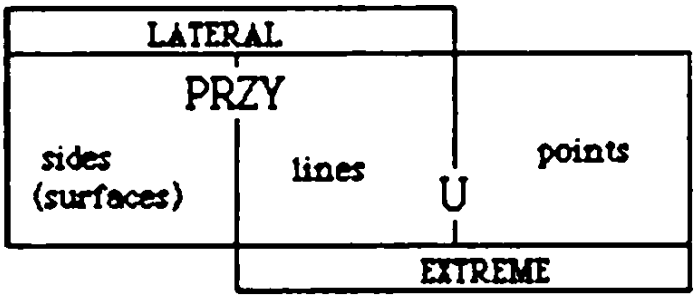
With these and other Polish examples, Sysak-Boronska (1980) gives convincing support for the argument that whereas przy • L concerns a relationship to the lateral side of L-r, P u • G relates rather to an extreme peripheral part of L-r, a peripheral line or point. She notes that "lateral" may pertain to a surface (przy ścianie) or a line (przy autostradzie) and thus there is some overlap with P u when the relation involves an area of L-r schematized as a line:

P kołnierz przy marynarce / u marynarki: the collar on the coat

P Ucho przy dzbanku / u dzbanka jest nadkruszone.: The handle on the jug is chipped.

Sysak-Borońska (1980, 147) compares how these two prepositions are used with different L-rs as follows:

(3.57)



I will adapt these findings into the semantic conditions for P przy and u such that while przy relates to either a "lateral boundary-surface" or "lateral boundary-line". u relates either to a "boundary-line" or "boundary-point" Let us look at the relations to boundaries that these prepositions express.

-- P przy • L --

P przy is more specific than R u in that it relates to the lateral boundary of L-r (lateral being that which is canonically perpendicular to the ground). It also expresses more than just a relationship of juxtaposition between SpE and L-r. The following examples:

P Nie mam przy sobie pieniędzy. I have no money on/with me.

P klamka przy drzwiach: the handle on the door

are representative of the usage of przy: it indicates not just proximity, but real or apparent contact. It becomes clear from this why przy is sometimes an equivalent of on.

The following are examples of *apparent* contact:

P siedząc przy telewizorze: sitting right at the TV

P "Jaki człowiek?" "Ten tam przy ścianie":
"Which person?" "That one there by the wall."

The emphasis is on the closeness of the proximity, bordering on contact, between the viewer and the television in the first example, between the person and the wall in the second. If the lack of perceived contact between two objects were at issue, say if a pen were lying near a piece of paper but not touching it, the use of przy would be unacceptable.

P *Długopis leży przy kartce papieru.: *The pen is lying at a piece of paper.

Koło • G, which indicates proximity, would be a more natural preposition in this case in Polish. This could be contrasted with

P ołówek przy notesie: a pen with/ attached to a note pad

which is not only an example of contact, but of attachment. As with on/na, a "dependent typicality" condition will be acknowledged for przy • L, here, one of ATTACHMENT, which may or may not appear, depending on whether contact is involved.

The semantic conditions for P przy • L can be stated as follows.

$$\text{SpE przy L-r} \bullet \text{L:} \left[\text{SpE CONTACT WITH LATERAL BOUNDARY} \begin{Bmatrix} \text{-SURFACE} \\ \text{-LINE} \end{Bmatrix} \text{OF L-r (Nec)} \right] \Longrightarrow \text{ATTACHMENT (Dependent typicality)}$$

The condition of attachment makes przy another exponent of the following use type first discussed in 3.1.1.

• "SpE attached to L-r" $[_{\text{Place}}$ P PRZY$_{\bullet \text{attach}}([_{\text{Thing}}$ LATERAL BOUNDARY $\begin{Bmatrix} \text{(-SURFACE)} \\ \text{(-LINE)} \end{Bmatrix}]_{\text{L-r}})]$

Since the specificity of przy is not matched by separate equivalents in Russian and English, it is translated by R na and English on (cf. (3.11)).

P guziki przy koszuli: R pugovicy na rubaške: the buttons on the shirt

Przy differs from P na in that the former does not indicate support as the latter can. Klebanowska (9171, 43) comments on the difference, saying that P guziki *na* koszuli would be understood to mean the buttons were lying on the shirt, probably not sewn onto it. The idea of support (usually by a horizontal surface) is more prominent with

na as opposed to the normal contact with the vertical side expressed with przy

Sysak-Borońska (1980, 110) also points out that the confined nature of the contact with przy + L (with a line, for example) can differentiate it from the broader nature of the contact more common with P na + L, cf.:

(3.58) P frędzle przy abażurze: the tassles on a lampshade

versus P wzory na abażurze: the patterns on a lampshade

Similarly, one says in Polish mapa na ścianie (a map on the wall; a broad area of contact is involved), but klamka przy drzwiach (the handle on the door; the area of contact is small).

-- P u + G --

Like R u, P u indicates a relation of juxtaposition of SpE and L-r, but as the following examples (from Sysak-Boronska and Szymczak) illustrate, it is a L-r which is schematized as a point or a line, usually involving the extremity of some entity

(3.59) P U wylotu rury: at the outlet of the pipe
P u kresu podróży: at one's journey's end
} L-r schematized as a point

P miecz u pasa: a sword at his waist
P Rybacy łowią u północnych brzegów Szkocji.: Fishermen are fishing off the northern shores of Scotland.
} L-r schematized as a line

The following condition embodies this aspect of P u:

$$\text{P SpE u L-r + G: } \left[\text{SpE JUXTAPOSED WITH BOUNDARY } \left\{\begin{matrix}\text{-POINT} \\ \text{-LINE}\end{matrix}\right\} \text{ OF L-r (Typ)}\right].$$

• "SpE attached to L-r"

The juxtaposition which P u indicates may entail attachment between SpE and L-r by some external means (e.g. between SpE and some point of L-r) (examples from Sysak-Borońska, 1980):

(3.60) P guzik u płaszcza: a button on a coat

P Bagaże wisiały na pasach u siodła: The baggage hung on straps from the saddle.

P U stropu wisiał wianek czosnku i pęk ziół:
At/from the ceiling there hung a rope of garlic and a bunch of herbs.

This will be recognized by the following additional semantic condition for P u:

[SpE ATTACHED TO A POINT OF L-r (Typ)].

As a second typicality condition in the meaning of P u, it alone may be sufficient for the use of this preposition (as in the examples immediately above): it may not appear at all (see the example with rybacy u brzegów Szkocji), or both conditions may come to bear (miecz u pasa, in which the sword is juxtaposed with the belt line and attached at some point on the waist). Actual contact between SpE and L-r as part of the attachment is not relevant in the application of this semantic condition since the attachment is by some external means. L-r in fact cannot perform the function of a link:

P *lampa u haka a lamp on a hook.

Na + L would be used instead for such contact. Note the use of na and u in the example from Sysak-Boronska (1980, 99) cited above:

(3.60) P Bagaże wisiały na pasach u siodła.
The baggage hung on straps from the saddle.

The actual contact between the baggage and straps is expressed by na whereas the indirect contact by attachment between the baggage and saddle is expressed by u.

Unlike with przy, which relates exclusively to a lateral side of L-r, P u can relate attachment to any side of L-r (cf. (3.11)):

P pompon u beretu: the pompom on a beret

P raczka u walizki: the handle on the suitcase.

This differs from P na which most often refers to an upper surface of L-r, since the upper surface is more likely to be the supporting surface (Klebanowska, p. 43).

(3.61) P komin na fabryce: the chimney on the factory

P Na oparciach ławek są uchwyty dla pasażerow stojacych.:
There are handles on the backs of the seats for standing passengers.

The translations above show that English normally translates this relationship of attachment with on. As shown previously (3.11), Russian translates this use type with na + L.

R ručka na čemodane: the handle on the suitcase

R pugovicy na rubaške: the buttons on the shirt

• "SpE -part of L-r-whole-(body part)"

$[_{Thing}\ PART]_{SpE}.\ [_{Place}\ P\ U\ (_{Thing}\ ANIMATE\ EXTREMITY\text{-}WHOLE]_{L\text{-}r})]$

P u + G can function as a variant of w + L to indicate a part/whole relationship (cf. 3.1.2) if the L-r is an extremity of an animal, including humans. In this case, the attachment is natural and not by some external means. The condition SpE ATTACHED TO POINT OF L-r is still evident in that the use type is restricted to bodily extremities which have a small, point-apprehensible area of connection (examples from Sysak-Borońska, 1980).

(3.62) P palce u rąk, nóg: the digits on one's hands, feet

P rzesy u powiek: lashes on one's eye lids

P Ogon u ratlerka jest cienki i długi. The rattler's tail is thin and long.

• P "SpE u kogoś", R "SpE u kogo-libo"

This use type in Polish and Russian will be addressed in section 3.2.4.

-- Other language-specific schematizations: Further equivalents of R u + G --

Bělićová-Křížková (1978, 131) makes the observation that Polish expresses the vertical or horizontal aspect of a spatial relation in cases where Russian is more apt to indicate proximity. The following examples of the use of P przed, pod, and nad in Polish where Russian uses u will serve to illustrate this point, although a detailed analysis of these prepositions is beyond the scope of this study

In reference to a L-r with a marked front side, przed + I is often used in Polish to

indicate the spatial relation to this side rather than just proximity to the L-r as indicated in Russian by u + G. In Russian there is less regard for the side of L-r involved than for the relation of proximity, and R pered + I is used less often in such situations than is P przed + I (Bělićova-Křížková: 1973, 185):

(3.63) P Spotkamy sie przed teatrem.: R Vstretimsia u teatra.:
Let's meet at/in front of the theater.

P Stali przed brama.. R Oni stojali u vorot.: They stood by/at the gate.

When the L-r is a building or one of its parts, P pod + I is often used to indicate the proximity of something relatively small to the base of L-r.

(3.64) P Dziecko stało pod pomnikiem.. R Rebenok stojal u pamiatnika.
The child stood by/at the base of the monument.

P pod ścianą. R u steny: by the wall

P pod kościołem. R u cerkvi: by the church

Usage of pod in Russian to indicate proximity rather than literally "under" is less common, appearing in a few expressions such as pod nogami, and pod oknom (as in reference to shrubbery growing outside a house, below window level). Proximity to settlements (cities, towns) however is most commonly expressed by pod + I in both P and R.[1]

(3.65) P Mój kolega mieszka pod Warszawą, pod Moskwą.:
R Moi drug živet pod Varšavoj, pod Moskvoj:
My friend lives near/on the outskirts of Warsaw, Moscow

If the L-r is a body of water, Polish distinguishes proximity with nad + I.

(3.66) P dom nad morzem: R dom u moria: a home by the sea

Russian and English may optionally schematize the relation according to the use type seen in 3.1.1, namely "SpE attached to L-r perimeter" and express it with R na + L/ English on:

cf. (3.12) P dom nad jeziorem: R dom na ozere: a house by/at the lake

---

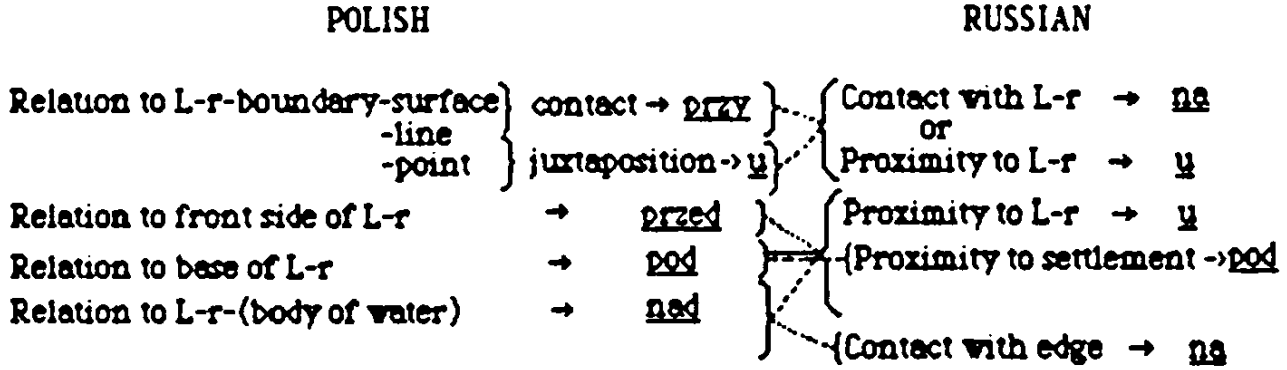
[1]This usage is logical from a historical perspective. In the days when cities and towns were surrounded by walls, to be near a city was to be in close relation to the base of this high wall. Sumilina (1961, 26) notes that this more "literal" meaning of pod gave way by the 19th century to the current meaning of proximity.

P Warszawa leży nad Wisłą: R Varšava raspolożena na Visle.:
Warsaw is located on the Vistula.

These different ways in Polish of characterizing what Russian usually expresses simply as a relation of proximity reflect the lack of a simple Polish equivalent for R u and (as we will see in 3.2) for English at. P przy and u express more specific relations of contact and proximity with only certain types of L-rs. There are of course other prepositions expressing proximity in Polish, but even these are colored by conditions in their meanings in addition to that of proximity that do not always make them appropriate, e.g. koło, około (near, around, about) or obok (beside, next to).

The following, then, is a cross-comparison of some of the factors that have priority for a Polish speaker in schematizing a localizer and the spatial relation of SpE to it, as opposed to the factors which have priority for a Russian speaker.

(3.67)



It becomes clear how often proximity is a more likely schematization for a Russian speaker than the various possible relations from which a Polish speaker is likely to choose.

-- Further equivalents of P przy + L --

Russian, on the other hand, lacks a preposition to express the specific relation of contact with a lateral surface/line boundary that P przy expresses, but various Russian and English translation equivalents can reflect different parts of this meaning. When, for example, the relation to a lateral surface is one of a person facing an object

of some activity, Russian will use za, and English -- at.

P Wszyscy już siedzą przy stole.: R Vse uže sidjat za stolom.:
Everyone is already sitting at the table.

This relation of functional orientation to an object will be discussed under the use type "SpE at L-r-(object of activity)" in 3.2.3.

The idea of contact between the lateral surfaces of two like objects is expressed in Russian by k + D and in English by to:

(3.68) P ramię przy ramieniu: R plečo k pleču: shoulder to shoulder

P jeden przy drugim: R blizko drug k drugu: close to each other

A rare translation equivalent for P przy + L is R pri + L, restricted mainly to the following nouns (Żeberek, 1984a, 156), as a variant of R u + G: vkhod, vykhod, v"ezd; e.g.,

(3.69) P Kasa biletowa znajduje się przy wejściu do teatru.
R Biletnaja kassa nakhoditsja pri vkhode v teatr.
The ticket window is located at the entrance to the theater.

In general R pri + L does not indicate proximity or contact, but rather what Šumilina (1961, 27) and subsequently Żeberek (1984a, 57; 1984b, 17) refer to as "spatial belonging" (R *prostranstvennaja prinadležnost'*). R žit' pri stancii, for example, indicates that someone lives on the territory belonging to the station. As I discuss in Cienki (1987, 11), the use of R pri as a variant of R u to mean proximity depends on the context, on the L-r involved; if the area of "spatial belonging" is small enough, as in the case of a ticket window at the entrance of a theater, the relation could be schematized as one of proximity.

The occasional use of Polish przy to refer to spatial belonging can thus be seen as a generalization of the spatial semantic condition of "contact with the boundary" to the more abstract domain of the Possessional semantic field (as discussed in Jackendoff, 1978), e.g.:

P Przy instytucie jest dom studencki.: R Pri institute - obščežitie:
The institute has a dormitory.

3.2 General direct location

3.2.1 *An analysis of at*

Previous semantic descriptions of at, the exponent of general direct location in English, have varied much more widely than have those of in or on. Phrased in the present terminology of SpE and L-r, Bennett (1975) simply defines at as "locative L-r"; Leech (1969) as "SpE is contiguous or juxtaposed to the place of L-r, where the dimensionality of L-r is not significant." As Cuyckens (1984a, 53) points out, these analyses, although not wrong, are insufficient. He considers the following phrases and sentences:

(3.70) a.) the man at the wall

b.) the man at the table

c.) Meet me at the post office

d.) Meet me at the Market Place

e.) They put up camps at strategic points

f.) *the man at the living room

Cuyckens groups the examples as indicating

(3.71) (i) proximity (examples a. and b.)

(ii) proximity or coincidence (ex. c. and d.)

(iii) coincidence (ex. e.).

He notes that Leech's definition fails to characterize at in terms of (ii) and (iii); Bennett's fails to explain why "SpE at L-r" can be taken to mean "SpE in L-r" in (3.70)c., whereas at cannot be used this way in (3.70)f.

Lindkvist (1950) provides a very detailed account of all the possible uses of the spatial preposition at, but as Cuyckens (1984a, 53) comments, "As a result of his craving for detail, the picture Lindkvist presents is sometimes rather unsystematic." Lindkvist distinguishes five meanings which include a great deal of contextual information and fail to capture what the many uses of at may have in common.

In her definitions, Jessen (1974) treats the aspects of proximity and coincidence discussed above, but does so by devising two different at's. One, call it at_1, has a more general usage, and she defines it as:

'X at Y' : X coincides with Y Condition: Y is grounded with respect to X & Y is point-apprehensible.

The latter condition (of point-apprehensibility) is important to notice and, it should be mentioned, appeared first in one of Lindkvist's definitions as "locative within an area or space or on a surface apprehended as a point." The other at recognized by Jessen is more narrow in its applicability, and we will call it at_2. She defines it as:

'X at Y' : X juxtaposed with periphery of Y Condition: Y is a barrier/ obstacle with respect to X.

Jessen contrasts the two at's with examples showing that at_1 can be considered unmarked and could conceivably be substituted by in, on, or by. At_2, indicating proximity, cannot be replaced by in or on; at_1 thus appears as the superordinate in a hyponymic relation to in, on, by, and at_2. The following is one of Jessen's (p. 54) examples for at_1.

(3.72) a. Fred is waiting for Joan at the post office.

b. Fred is waiting for Joan in the post office.

c. Fred is waiting for Joan right by/ just outside the post office.

While (3.72) b. and c. are inconsistent with each other, she observes, neither one of them is inconsistent with (3.72)a. She contrasts this with the following examples for at_2 (p. 56):

(3.73) a. Fido is sitting at the piano.

b. Fido is sleeping in the piano (e.g. an open grand piano)

c. Fido is sleeping on the piano.

Here at_2 contrasts with in and on, and is close to but not the same as right by. Sysak-Boronska (1980) basically follows Jessen's approach. But both of them, by splitting at in two as it were, miss a generalization common to the different uses of at that they cite.

Cuyckens (1984a) presents an insightful analysis based on the idea that at expresses a very general meaning from which more specific meanings ((3.71) (i) - (iii)) can be derived, and which explains the inapplicability of at in (3.70)f. As we have seen, the presence of a perceived interior and of a potentially supporting surface (or technically a boundary) condition the selection of in and on respectively. Cuyckens points out that these selection criteria are irrelevant for at, that in fact with at the L-r is considered a *dimensionless* entity, often thought of as a point. I agree with his claim that at relates a semantically very narrow concept, simply that SpE is included in the region of the place referred to by L-r which is apprehended as a point. As we will see below, such a definition allows for an interpretation of the "coincidence" as well as the "proximity" readings, as opposed to a definition such as Herskovits' (1986):

at : for a point to coincide with another

which does not. Cuyckens defines at as

AT (x, y) --› INCL[USION] (x, REGION (POINT) y).

I will adapt this definition in the form of the following semantic condition:

SpE at L-r : [SpE COINCIDENT WITH PLACE OF L-r-POINT (centrality)].

It is a centrality condition based on the relative distance between SpE and L-r; at is less applicable as the distance of SpE from L-r increases. Herskovits (1986, 51) supports the view of at as a graded concept: "Evidence that at 'tends' toward coincidence is also provided by the role of modifiers such as exactly, precisely, etc. The phrase exactly at reduces the allowed deviation from coincidence; it is as if at were more or less true, and truer if the objects are closer."

The explanations with each of the following use types and the corresponding selection restrictions on L-r elucidate the basis of the different senses of at ((3.71)(i) - (iii)).

• "SpE proximate to L-r" $[_{Place}\ AT\ ([_{Thing}\ \begin{pmatrix} BOUNDARY\ or \\ CONTAINER \end{pmatrix}\ D]$

Cuyckens (1984a, 53-57) emphasizes that the more specific senses of at seen above in (3.71)(i) - (iii) are not part of the semantic core of at per se, but result from the contexts in which at occurs. At may be used to express a relation between SpE and L-r when the L-r can be considered as a point, but L-rs whose physical properties are conceptually dominant resist apprehension as a point, and at may not be used directly with them. The speaker resorts to in or on in such situations. However, Cuyckens argues, at may still be used to refer to a relation between SpE and *the place* of L-r (see the semantic condition for at) i.e. with the *remaining* points outside or beside L-r. The coincidence relation then is no longer between SpE and L-r itself but between SpE and the PLACE of L-r.

To clarify this further, consider an office scene where someone looking for Barbara is told, "She's there at her desk." In this situation where a close-up view of the desk is involved, its dimensions remain conceptually salient. A desk or table (as in (3.70) b.) has the prominent function of being a supporting surface, such that a relation of direct location with it is lexicalized with on. Any attempt to consider the desk in front of us as a point still leaves that point in a region of space. When at is used with something normally schematized as a CONTAINER (defining an INTERIOR) or BOUNDARY, it is this region of space, the PLACE of L-r, that enters into a coincidence relation with SpE. At can only indicate proximity in such a sentence; when the L-r in the "close-up view" is considered as a point, only the points belonging to the PLACE next to the L-r itself can enter into a relation of co-location.

Cuyckens considers other examples when the physical properties of a L-r are conceptually dominant such that they normally preclude the point apprehensibility of L-r. He notes that in the examples

g.) the man at the closet

h.) He is at his bed.

the function of the L-r triggers the categorization of "enclosing area" (or "supporting surface" for the bed). Although at is precluded from expressing a relation of coincidence between SpE and L-r themselves, the L-r may be considered as a point when SpE enters into a relation of coincidence with the remaining points of the PLACE of L-r, i.e. the points beside L-r. Therefore if at is used in these sentences, it can only be further specified as expressing "proximity."

- "SpE coincident with L-r" [Place AT ([Thing POINT])]

Cuyckens (1984a, 58-59) exemplifies this type with

e.) They put up camps at strategic points

and other sentences such as

i.) Chicago is at the point where East and West meet.

He notes that in such examples, "the speaker does not reckon with the fact that the entity [L-r] actually covers more than one point" and so can deal with L-r as a point. Not only that, but in this use type, the PLACE OF L-r is contained within L-r itself. There is no possibility of a proximity reading with this use type since there is no PLACE OF L-r outside the point L-r itself. As Cuyckens (1984a, 59) puts it, "Indeed, when an entity y is unambiguously and exhaustively circumscribed by its boundaries, then every x located outside y cannot be said to be included in the place referred to as y." The only reading possible in this use type is one of "coincidence" between SpE and L-r.

- "SpE proximate to or coincident with L-r"

[Place AT ([Thing {POINT (BOUNDARY or CONTAINER)})]

In sentences like (3.70) c. and d., the SpE may be perceived to be coincident with L-r or proximate to it. The L-rs involved are more neutral with respect to the label "container/boundary" and do not necessarily emerge as enclosing areas when the

speaker considers co-location between SpE and such a L-r. The speaker may deliberately consider a post office, for example, as an enclosing area, say from a close-up point of view. In this case, at would be used to cover a relation of co-location with the remaining space outside of L-r, in the PLACE OF L-r, implying a relation of proximity. (Recall the hypothesis made under the use type "SpE proximate to L-r": a container/boundary apprehended as a point remains a point with a surrounding region of space, the PLACE OF L-r.)

But if the speaker assumes a remote viewpoint, the post office may be considered devoid of its specific dimensions, as a point. A direct relation of co-location between SpE and L-r, coincidence, may then be expressed by at. The two possible schematizations of L-rs in this use type allow for the two readings of at, proximity or coincidence.

3.2.1.1 *On point apprehensibility*

Let us give some further consideration to the phenomenon of point apprehensibility before considering those cases in which it cannot apply. Sysak-Boronska (1980, 32-36) relates this requirement for the use of at to the paradox that this English preposition with the most general meaning does not necessarily have the broadest applicability. The fact is that there is a restricted set of localizers that are liable to this conceptual reduction to a dimensionless entity. Sysak-Boronska notes that the quantitatively most significant group of such localizers represent "objects erected by man in the process of civilization." She groups them as follows:

1) Institutions -- educational, entertainment, social service

At is more common when the function rather than the material aspect of the institution is uppermost in the speaker's mind. This coincides with Lindkvist's (1978) observation that at is often used rather than in when the locality is referred to by its proper name rather than by a common noun, e.g.,

in the restaurant/ at the Ritz

in the theater/ at the Savoy.

"The spatial properties of a locality are often less underlined by a proper name than they are by a noun in itself designating, and reminding one of, special spatial characteristics" (Lindkvist: 1978, 63).

Sysak-Borońska continues that at is also common when the prominent idea is that a glimpse of the object's location is taken or the situation is conceived of as temporary The object's dimensions are again irrelevant.

a stay at a hotel

The ship landed at several ports

2) Geographical points -- especially smaller cities and villages

Larger cities are common with at more in a historical perspective (the Olympics at Mexico City) or in relation to an event of short duration (the conference at The Hague). Cities are also point apprehensible in a dynamic context, such as part of an itinerary (We ll stop at New Haven and then go on to New York.).

A recurring theme in the descriptions above is that of point apprehensibility as a result of a distant view point (cf. a glimpse of the object's location, a historical perspective, a stop on an itinerary). The relation between distance (in space or time) and the ease with which an object may be apprehended as a point may be likened to the phenomenon of the apparent decreasing size of an object with distance such that it eventually appears point-like. Herskovits (1986, 132) notes the contrast between the use of in and on which imply a close-up view in which our knowledge of the position is rather precise, and at which implies a remote view where our knowledge of the actual position is often imprecise.

Now let us turn to cases in which at is inapplicable. Returning to the example

f.) *the man at the living room

Cuyckens explains that a L-r such as a living room is not only a functionally enclosing

area when it enters a direct location relationship with an SpE (such that in precludes the use of at), but it is also conceptually a clearly circumscribed area. A living room is defined by its boundaries such that every x located outside the room cannot be included in the PLACE of the room, and thus a proximity reading is also eliminated for at. Countries and states normally also fall into this category of entities whose PLACE is circumscribed by their boundaries. Cuyckens (1984a, 59) cites the unacceptability of

j.) *our spy at Belgium.

Miller and Johnson-Laird (1976, 389) agree, citing that

k.) *a city at California

l.) *the table at the living room

are unacceptable due to the nature of the regions involved Such L-rs do not have regions (or a surrounding place); they *are* regions

Cities and towns are not as restrictive in this respect since, according to Cuyckens (1984a, 60) their boundaries are not as clearly marked, and at is permissable, particularly with a remote viewpoint:

m.) our spy at London.

On this point, Lindkvist (1978, 28) makes the observation that in its earliest history the city of London was most often referred to as at London. From the Early Modern English period into the 18th century, the expression at London varied with in London as the city grew. By the end of the 18th century the great area of the city caused the usage in London to replace that of at London. Similarly, he cites examples showing that at was used more often centuries ago than it is now with the names of distant countries. Lindkvist reasons that since geographical knowledge was slight, such distant lands were apprehended by most people in a vague way, as geographical points far off in the world rather than as countries with clear boundaries.

3.2.2 *Slavic translations of the above use types for at*

The different use types of at discussed above stem from the same single semantic condition. The further nuances of proximity versus coincidence are derived depending on the context in which at occurs. A look at the translation equivalents for at in the examples above and in 3.1.4 shows that at has no true counterpart in Polish or Russian. The comments Cuyckens (1984a, 62-63) makes on Polish apply to Russian as well, that these languages (like other Slavic languages) must specify the spatial relation between SpE and L-r more specifically from the start. The translations of at in P and R include all of the prepositions in these two languages analyzed above: R na, v, and u; P na, w, u, przy, and the variants for proximity przed and pod.

In contexts where at maintains the reading of "coincidence", it usually corresponds to P na or w + L and R na or v + L. Na is common with L-rs schematized as two-dimensional:

the boys at/on the skating rink P chłopcy na lodowisku R mal'čiki na katke,

and with three-dimensional L-rs whose dimensions may be conceptually neutralized (cf. 3.1.3):

at the post office: P na poczcie: R na počte.

P w/ R v are of course also used with three dimensional L-rs:

at school: P w szkole: R v škole

and also in reference to geometric points:

the intersection at point A: P przecięcie w punkcie A: R peresečenie v punkte A.

It is interesting to note that Sysak-Borońska (1980, 40) mentions this linguistically three dimensional interpretation of a point with P w as something that is in fact problematic for Polish geometry teachers. How does one explain to students how something can be "in" (P w) a theoretically dimensionless point?

- Na of general direct location?

Although Slavic lacks a semantic counterpart for at, there is a tendency in Rus-

sian and particularly in Polish (and perhaps in other Slavic languages) to use na to indicate general direct location. Klebanowska (1971, 20) points out the following usage in Polish.

(3.74) P Byłem na basenie.: I was at the pool

implies I was there but maybe didn't even go in the water, whereas in

P Ania kąpie się w basenie.: Anya is swimming in the pool

the pool is perceived as the recess in the ground itself, the container. Na here indicates a more general location contrasted with the more specific w.

Sysak-Bońska (1980, 70) notes a tendency that has grown since the 1960's in colloquial Polish to use na to indicate general direct location. This is particularly the case with reference to places of work. This is understandable in reference to buildings and institutions:

(3.75) P Mój tata pracuje na fabryce/ na hucie/ na kopalni/ na kolei.:
My dad works at the factory/ at the mills/ at the mine/ for the railroad

but is more surprising in the following context, that of someone working as a driver:

(3.76) P Wujek jeździ na taksówce/ na traktorze.:
My uncle drives a taxi/ a tractor (for a living).

Recall (from 3.1.3) that in Polish it is w, not na, that is used to indicate "SpE transported by L-r-vehicle", unlike in Russian where the construction *na* taksi, etc. is the rule, not the exception.

Furthermore, P na indicating general location does not necessarily assert "contact" between SpE and L-r, but like at it associates two objects apprehended as points (Sysak-Bońska: 1980, 70-71):

P Zostaw mi wiadomość na recepcji.: Leave me a message at the reception desk.

As such it sometimes substitutes for przy when the normally prominent schematization of L-r is that of something bearing a lateral surface:

(3.77) P Wartownik na bramie dokładnie obejrzał nasze przepustki.:
The guard at the gate looked at our passes carefully

Similar to English at, P na of general location is used (colloquially) with stages of one's progress, points on a journey, which we have seen above also lend themselves to point apprehensibility:

(3.78) P Że dwie cenne minuty straciliśmy na światłach/ na przejeździe kolejowym.:
We lost something like two precious minutes at the light/ at the railroad crossing.

This usage is limited for the most part to the colloquial language, and has spread little into literary Polish (Sysak-Borońska: 1980, 73). However, because of how it diverges from the semantic conditions of na cited in 3.1.1, it does seem worth acknowledging na of general location (na_g) with the following additional condition:

colloq. P SpE na L-r + L: [SpE COINCIDENT WITH PLACE OF L-r-POINT (cent)].

In Russian this use of na is considerably more restricted than in Polish. R na can indicate general direct location when one is speaking of attendance at an event or what I will term a "function":

(3.79) R na koncerte. P na koncercie. at a concert

R na uroke P na zajęciach. at a lesson, in class

R na sobranii. P na zebraniu: at a meeting

R na futbole. P na meczu piłki nożnej: at a soccer game

Otherwise R na is not used to indicate general direct location. Instead the more specific prepositions of direct location are used:

(3.74a) R Ja byl v bassejne: P Byłem na basenie.: I was at the pool.

(3.77a) R Časovoj u vorot tščatel'no osmotrel naši propuski: P Wartownik na bramie ...:
The guard at the gate ...

(3.78a) R Okolo dvukh cennykh minut my poteriali u svetofora/ u peresečenija:
P ...na światłach/ na przejeździe kolejowym.: ...at the light/ at the railroad crossing.

Rather than supplying evidence of an additional condition in the meaning of R na, the usage "at a function" seen in (3.79) seems rather to represent a separate use type of this preposition. In this use type the L-rs do not represent buildings or objects with salient boundaries, but rather activities with abstract boundaries. The condition SpE CONTACT

WITH L-r-BOUNDARY applies, but since the boundaries are not concrete, the resulting effect is one of "adhering" SpE to L-r. The use type, "R SpE na L-r-function" is characterized by the selection restriction: [$_{Place}$ R NA ([$_{Thing}$ FUNCTION])].

Other Slavic equivalents for at are used in contexts where at expresses proximity. Then it usually corresponds to R u and P przy, u, or their variants przed and pod. Przy is used when there is "contact" between SpE and a lateral surface of L-r

the table at the wall: P stół przy ścianie: R stol u steny

and P u is used when there is juxtaposition with a linear or point apprehensible extremity:

a village at the foot of the Himalayas: P wioska u podnóża Himalajów:
R derevnja u podnožija Gimalaev

As seen in 3.1.4, if the spatial relation involves the front side of L-r, a possible variant in Polish is przed + I (cf. (3.63)).

Let's meet at/in front of the theater: P Spotkamy sie przed teatrem:
R Vstretimsja u teatra.

Polish also shows the dissimilarity of the lesser height of SpE in relation to a building or its parts, or like Russian -- proximity to cities -- with pod + I (cf. (3.64)).

the mailman at the door: P listonosz pod drzwiami: R počtalion u dveri

the battle at Smolensk: P bitwa pod Smolenskiem: R bitva pod Smolenskom

Finally, a point by Cuyckens (1984a) should be emphasized, that none of the prepositions cited above as various translation equivalents of at (with the possible exception of the colloquial P na$_g$) actually *mean* the same thing as at. Based on the choices available in their lexicons, Polish and Russian speakers must always specify more exactly the spatial relation that in English may be captured more generally with at.

Two other use types notable for their Slavic translation equivalents are discussed in the following two sections.

3.2.3 *At an "object of activity"*

- "SpE at L-r-(object of activity)

The following examples

(3.80) Laurence was sitting at the piano.

Robin stood at the stove making omelettes

imply that the person is engaged in the normal use of the localizer, which is some object of activity. Cuyckens (1984a, 61) claims that such sentences do not show a separate element of meaning for at, but rather that any additional sense is merely implied, i.e. understood through a conversational implicature. Herskovits (1986, 135-136) argues, however, that the assumption of normal interaction in such sentences could not simply be inferred pragmatically If conversational implicature were involved, the pragmatic inference should be cancellable (Grice, 1974), which Herskovits shows does not work here:

(3.81) *?Maggie is at her desk, but she is cleaning the floor

Her second argument against simply relying on the reasoning of pragmatic inferences is that the inference of normal interaction with L-r does not follow when we express close proximity in some other fashion, as with Maggie is right by/ next to her desk. For these reasons, Herskovits sets up the separate use type for at, "Person using artifact."

Going beyond this, I will admit a separate semantic condition, the typicality condition (which may or may not be present in the use of at):

[SpE FUNCTIONALLY ORIENTED TOWARD L-r-OBJECT OF ACTIVITY (typ) (cent)].

It is also a centrality condition, less applicable as the orientation toward L-r becomes more oblique. The present use type may be seen as a correlate of the type "SpE proximate to L-r", since it is only possible when a proximity reading for at is also possible; the issue of functional orientation of SpE to L-r is no longer relevant if SpE is *coincident* with L-r. The current use type also depends on a categorization of L-r similar to that of the proximity use type, which may be characterized as

$$[_{\text{Place}}\ \text{AT}\ ([_{\text{Thing}}\ \begin{pmatrix}\text{BOUNDARY or}\\ \text{CONTAINER}\end{pmatrix}\text{-OBJECT OF ACTIVITY}\ ])].$$

The following provides an example of how the two use types reflect different categorizations of a L-r:

(3.82) the firemen at the fire / the children at the fire.

In the former example, the firemen may have actually been in the fire, surrounded by flames ("coincident with") while fighting it, but one does not necessarily conceptualize their definite position with respect to the fire. The second example is more likely to take the "proximity" use type, with the fire interpreted as a campfire, and the children more likely facing it in a functional orientation, as in

The children were at the fire warming their hands.

The SpE need not be a person, but it must be in a functional relation to L-r. Miller and Johnson-Laird (1976, 389) observe,

> It also seems to be true that the notion of 'interaction' includes considerably more information than at first may meet the eye. One is much more likely to say "The chair is at the table" if it is upright and facing the table than if it is lying on its side facing away from the table

As this shows, SpE must have a potentially functional interaction with L-r in order to bear a functional orientation to it at all (Herskovits: 1986, 136), thus the strangeness of:

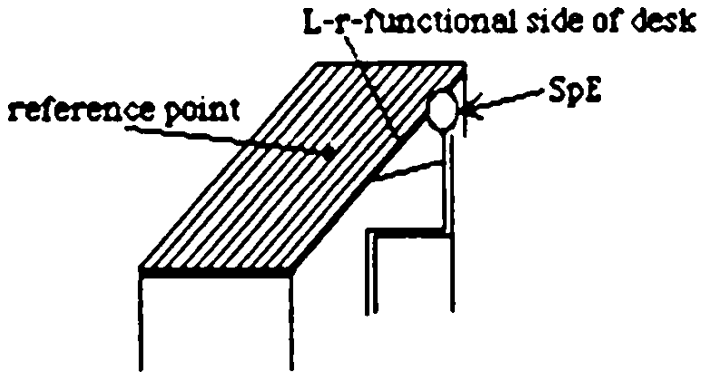
?*The refrigerator is at my desk.

The above examples also support the argument that FUNCTIONALLY ORIENTED TOWARD OBJECT OF ACTIVITY need be recognized as a separate condition rather than, say, "SpE using L-r for normal function." As Miller and Johnson-Laird (1976, 389) point out, the activity could be of *any* nature: the woman at the piano "could be playing it, leaning against it, or even attacking it with an ax."

The position "at some object of activity" is the characteristic feature of a separate use type in Russian as well, but here the exponent of the use type is the preposition za. The more common role of R za is to indicate position behind, in back of, or beyond

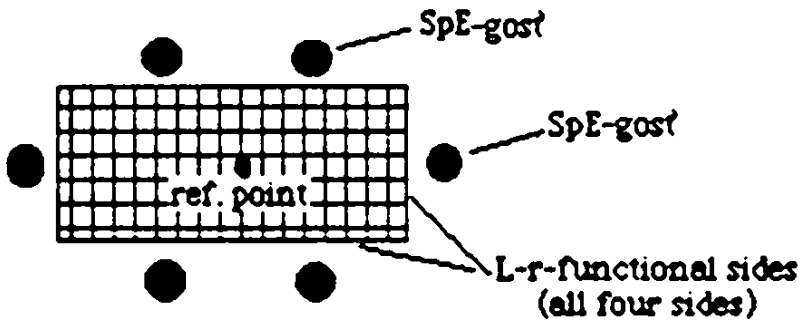
L-r. that is, on the side of L-r further from some point of reference (see 3.2.1). The present use type of R za it seems is marked by the fact that the reference point is the object referred to by L-r, such that the role of L-r in the relation is technically played by the *functional side* of L-r. For example, in R sidet za pismennym stolom, the side of the desk one sits at technically plays the role of L-r. The remainder of L-r takes on the role of the reference point.

(3.83)



Someone sitting by one of the curved sides of the piano therefore would not be said to be sitting za rojalem in this sense This also explains how the guests sitting at all four sides of a dinner table are all said to be za stolom: if there are place settings on all four sides, all of the sides bear the role of functional sides (see (3.84)).

(3.84)



R gosti za stolom

Thus unlike at which demands the functional orientation of SpE to whatever side of L-r is required (e.g., the woman at the piano who may be playing it or attacking it with an ax from the side), R za is more restrictive and requires a functional relation of SpE to the inherently functional side of L-r; the ženščina za rojalem must be sitting

at the keyboard in this sense of za. Therefore, a refrigerator placed on the keyboard side of the piano would not automatically be in Russian

*kholodilnik za rojalem.

This selection restriction on SpE as bearing a functional relation to L-r may be expressed

$[_{Thing}$ FUNCTIONAL INTERACTOR$]_{SpE}$. $[_{Place}$ R ZA($[_{Thing}$ FUNCTIONAL SIDE$]_{L\text{-}r}$)].

The functional interactor need not be a person, but must bear a functional relationship to L-r, e.g.,

(3.85) R stul za pismennym stolom: P krzesło przy biurku: the chair at the desk.

This use type has three translation equivalents in Polish (Żeberek: 1984a, 48-49): przy + L, za + I, and nad + I. Przy + L is the most common translation of the three. This use type simply represents another application of the condition for przy of CONTACT WITH A LATERAL BOUNDARY:

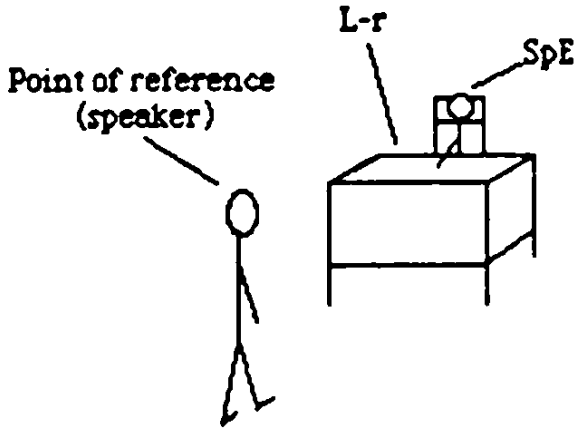
P Wszyscy już siedzą przy stole. R Vse uže sidjat za stolom.:
Everyone is already sitting at the table.

The issue of functional orientation or functional side does not arise with przy. The condition of ATTACHMENT in the lexical entry of przy does, however, sometimes play an extended, metaphorical role, in that przy often relates two objects that "belong together", even though they may not be attached physically. Thus in Polish one may refer to a small table that one keeps next to the sofa as a stolik przy kanapie.

P za + I is a less common translation equivalent for R za + I in this use type. It appears in the same instances when in English one might use behind for at, when the point of reference is separate from L-r, and the L-r is between SpE and the point of reference. The point of reference is often the speaker in this usage, as in the following examples:

P sprzedawczyni za ladą: R prodavščica za prilavkom:
the saleswoman behind the counter.

(3.86)



P Urzędnik siedzi za biurkiem. R Służaščij sidit za stolom.
The official is sitting behind his desk.

In Polish one may also use nad + I in the few situations in which the higher vertical orientation of SpE in relation to L-r may be salient:

P siedzieć nad książką, nad rachunkami: R sidet' za knigoj, za vyčisleniiami:
to sit with a book, with the receipts/at one's calculations.

This usage of nad is in keeping with the tendency in Polish to focus on the horizontal or vertical aspect of a spatial relation wherever either comes to bear in the situation

3.2.4 *At someone's place*

• R "u kogo-libo". P "u kogoś" $[_{Place}\ \overset{P\ U}{R\ U}\ ([_{Thing}\ HUMAN])]$.

When the localizer is an entity which may be categorized HUMAN, R u and P u express a relationship not of juxtaposition, but of coincidence with (i.e. co-location in) the place in which L-r is located. This condition common to both P and R u will be characterized as

[SpE COINCIDENT WITH PLACE OF L-r-HUMAN (Typ)].

This condition is mutually exclusive with the other condition(s) in the meanings of P and R u. Therefore juxtaposition with a person is not characterized in the two languages by u but by other prepositions such as P przy, obok, or koło and R vozle, riadom s, or okolo:

P Janek siedział przy Zosi/ obok Zosi.: R Ivan sidel vozle Sofii/ riadom s Sofiej.:
John sat next to Sophie/ at Sophie's side.

The "place" of L-r may vary extremely depending on the context. The place is usually confined to whatever area belongs to the person in the given context, what Weinsberg (1973) and Cienki (1987) refer to as the L-r's "domain". (It is easy to see from this how the use of P and R u is extended to mean possession.)[1] The smallest extreme is normally the limits of one's immediate vicinity ("on one's person").

(3.87) P Zostaw to u mnie.: R Ostav' èto u menia.: Leave that with me.

The greatest extreme could be one's cultural group, nation, country, or part of the world.

P U nas to nie jest tak.: R U nas èto ne tak.: It's not like that in our country.

When the "place of L-r" refers directly to the person(s) involved, the phrase is not translated in English with at (*Leave that at me), but rather using with (as in (3.87)). When the "place" broadens to, say, one's home, English may still use with

P mieszkac u swoich rodzicow: R žit' u svoikh roditelej: to live with one's parents

or "at one's place". Humans apparently resist the point apprehensibility which at requires (*to live at Pete)[2]. However the place associated with someone, usually where one lives, may be point apprehensible:

P u Piotra: R u Petra: at Peter's place or at Pete's.

Refering to L-rs of even greater extent, with may still apply in English:

The situation with the Poles is different.: P U Polaków jest inna sytuacja.:
R U Poliakov - drugaja situaciia.

or one may use a more specific expression of location, stating the limits of the "place of L-r", as in

In our country...: P U nas...: R U nas...

Russian and Polish also sometimes expand the phrase "SpE u L-r" to further specify the

---

[1]It should be exphasized that the usage of P/R u to be discussed here is in the context of Location, i.e. answering the question "Where?". The Possessive semantic field shows a related, but different, usage of u.

[2]This was not always the case in English. In Old and Middle English, "at someone" *was* an accepted way of saying "at someone's place" (Lindkvist: 1978, 21).

domain of the Localizer. Both R and P may do this with an additional Locative construction.

P Jest u ciebie w pokoju.: R On u tebia v komnate.: He is in your room.

Polish is more likely to replace this with a possessive pronoun construction. In Polish the "u + G w + L" combination is often considered colloquial or a Russicism (Cienki: 1987, 7):

P W naszym kraiu (u nas w kraiu) zaszlo wiele zmian.
R U nas v strane mnogo izmenenii.:
There have been a lot of changes in our country

3.3 Summary

3.3.1 *The semantic conditions and selection restrictions*

In sections 3.1 and 3.2, I proposed that the lexical entries for the prepositions discussed insofar as they express spatial relations entail the semantic conditions and selection restrictions summarized below. In addition to the three types of conditions proposed by Jackendoff (1983), namely necessary, centrality, and typicality conditions, a fourth type was proposed above: a dependent condition. For some of the prepositions considered, it was found that ATTACHMENT could be entailed as a dependent typicality condition if CONTACT was also present. I further proposed that a typicality condition may also be a centrality condition as in the case of FUNCTIONAL ORIENTATION for at.

The semantic conditions summarized for each preposition in brackets ([ ]) are presumed to interact (if there is more than one) as a preference rule system, as explained under (2.12) in section 2.2.2. In some cases, the rules interact differently, such that the conditions present mutually exclusive possibilities. These conditions or sets of conditions that are mutually exclusive possibilities will be enclosed in curly brackets ({ }) (following the notation of Jackendoff (1985)).

Representative examples are given to show the interaction of the conditions and selection restrictions of the prepositions in context, with additional examples showing

the range of translation equivalents possible across the three languages.

SpE on L-r: P SpE na L-r + L: R SpE na L-r + L:	SpE CONTACT WITH BOUNDARY OF L-r (Typicality) ⇒ ATTACHMENT (Dependent typicality) L-r SUPPORT SpE (Typicality)

- "SpE supported by L-r" $[_{Place}\ \begin{matrix}P\ NA\\ ON\\ R\ NA\end{matrix}\ ([_{Thing}\ SUPPORTING\ SURFACE])]$

a towel on a hook: P ręcznik na haczyku: R polotence na kriučke.

- "SpE contiguous with L-r" $[_{Place}\ \begin{matrix}P\ NA\\ ON\\ R\ NA\end{matrix}\ ([_{Thing}\ \begin{matrix}(SURFACE)\\ (LINE\ \ )\end{matrix}])]$

a point on the line: P punkt na prostej: R punkt na priamoi

- "SpE attached to L-r" $[_{Place}\ \begin{matrix}P\ NA_{\cdot attach}\\ ON_{\cdot attach}\\ R\ NA_{\cdot attach}\end{matrix}\ ([_{Thing}\ ])]$

the map on the wall: P mapa na ścianie: R karta na stene.

- "SpE attached to Localizer perimeter" $[_{Thing}\ ATTACHED]_{SpE}.\ [_{Place}\ \begin{matrix}P\ NA_{\cdot attach}\\ ON_{\cdot attach}\\ R\ NA_{\cdot attach}\end{matrix}\ ([_{Thing}\ PLANE]_{L\text{-}r})]$

The theater is on this street: P Teatr jest na tej ulicy: R Teatr na ėtoi ulice:

- "SpE transported by L-r vehicle" English $[_{Place}\ ON\ ([_{Thing}\ LARGE\ VEHICLE])]$

  Russian $[_{Place}\ NA\ ([_{Thing}\ VEHICLE])]$

We saw a lot of policemen on the subway.: R My videli mnogo milicionerov na metro.:

Though not for Polish (see section 3.1.3):

P Widzieliśmy wielu milicjantów w metrze.

- R "SpE na L-r-function" Russian $[_{Place}\ NA\ ([_{Thing}\ FUNCTION])]$.

R na koncerte: P na koncercie: at a concert

colloq. Polish SpE na L-r + L:

[{ [SpE CONTACT WITH BOUNDARY OF L-r (Typ)
==> ATTACHMENT (Dependent typ)
L-r SUPPORT SpE (Typ)] }
{ SpE COINCIDENT WITH PLACE OF L-r-POINT (Typ)(Cent) }]

P Byłem na basenie: I was at the pool.: R Ja byl v basseine.

SpE in L-r:
P SpE w L-r + L:
R SpE v L-r + L:
[SpE INTERSECT INTERIOR OF L-r (Nec)]

- "SpE in L-r-container" $[_{Place}\ \overset{P\ W}{R\ V}\ IN\ ([_{Thing}\ CONTAINER])]$

the jam in the jar: P dżem w słoiku: R dżem v banke

- "SpE embedded in L-r-filled solid" $[_{Place}\ \overset{P\ W}{R\ V}\ IN\ ([_{Thing}\ FILLED\ SOLID])]$

the nail in the board: P gwozdz w desce: R gvozd v doske

- "SpE-(a part) included in L-r-the whole" $[_{Thing}\ PART]_{SpE}.\ [_{Place}\ \overset{P\ W}{R\ V}\ IN([_{Thing}\ WHOLE]_{L\text{-}r})]$

a page in a book: P strona w książce: R list v knige

- "SpE-person in L-r-institution" $[_{Thing}\ HUMAN]_{SpE}.\ [_{Place}\ \overset{P\ W}{R\ V}\ IN([_{Thing}\ INSTITUTION]_{L\text{-}r})]$

the man in jail. P człowiek w więzieniu: R čelovek v tjurme

- "SpE-person in L-r-clothing" $[_{Thing}\ HUMAN]_{SpE}.\ [_{Place}\ \overset{P\ W}{R\ V}\ IN\ ([_{Thing}\ CLOTHING]_{L\text{-}r})]$

the woman in the big hat: P kobieta w dużym kapeluszu: R ženščina v bolšoi šljape

R SpE u L-r + G: [{SpE JUXTAPOSED WITH L-r (Cent)}
{ SpE COINCIDENT WITH PLACE OF L-r-HUMAN (Typ)}]

R Stol stoit u stenv: P Stół stoi przy ścianie: The table is by/next to the window.

R meč u poj.sa: P miecz u pasa: a sword at his waist

R Vstretimsia u teatra.: P Spotkamy sie przed teatrem.:
Let's meet at/in front of the theater.

R Rebenok stojal u pamjatnika.: P Dziecko stało pod pomnikiem.:
The child stood by/at the base of the monument.

R dom u morja: P dom nad morzem: a home by the sea

• R "SpE u L-r-kogo-libo" [Place R U ([Thing HUMAN])]

R u Petra: P u Piotra: at Peter's place

P SpE przy L-r + L: [SpE CONTACT WITH BOUNDARY{-SURFACE} OF L-r (Nec)
{-LINE }
==> ATTACHMENT (Dependent typ)]

P Stała przy oknie: R Ona stojala u okna: She stood by/at the window

P Wszyscy już siedzą przy stole.: R Vse uže sidjat za stolom.:
Everyone is already sitting at the table

P głowa przy głowie: R golova k golove: head to head

P Kasa biletowa znajduje sie przy wejściu do teatru:
R Biletnaja kassa nakhoditsja pri vkhode v teatr:
The ticket window is located at the entrance to the theater.

• "SpE attached to L-r" [Place P PRZY-attach([Thing LATERAL BOUNDARY{-SURFACE}L-r)]
{-LINE }

P guziki przy koszuli: R pugovicy na rubaške: the buttons on the shirt

P SpE u L-r + G: {[SpE JUXTAPOSED WITH BOUNDARY {-POINT} OF L-r (Typ)
{-LINE}
SpE ATTACHED TO A POINT OF L-r (Typ)]
{SpE COINCIDENT WITH PLACE OF L-r-HUMAN (Typ) }}

P miecz u pasa: R meč u pojasa: a sword at one's waist

P raczka u walizki: R ručka na čemodane: the handle on the suitcase.

- P "SpE u L-r-kogoś" $[_{Place}$ P U $([_{Thing}$ HUMAN$])]$

P u Piotra: R u Petra: at Peter's place

- "SpE -part of L-r-whole-(body part)"

$[_{Thing}$ PART$]_{SpE}$. $[_{Place}$ P U $([_{Thing}$ ANIMATE EXTREMITY-WHOLE$]_{L\text{-}r})]$

P palce u rąk, u nóg: R palcy na ruke, na noge: the digits on one's hands, feet

SpE at L-r:	SpE COINCIDENT WITH PLACE OF L-r-POINT (Cent) SpE FUNCTIONALLY ORIENTED TOWARD L-r-OBJECT OF ACTIVITY (Typ)(Cent)

- "SpE proximate to L-r" $[_{Place}$ AT $([_{Thing}$ (BOUNDARY or CONTAINER) D$]$

the man at the wall. P mężczyzna przy scianie: R človek u steny

- "SpE coincident with L-r" $[_{Place}$ AT $([_{Thing}$ POINT$])]$

the boys at the skating rink. P chłopcy na lodowisku: R malčiki na katke

the intersection at point A. P przeciecie w punkcie A: R peresečenie v punkte A

- "SpE proximate to or coincident with L-r"

$[_{Place}$ AT $([_{Thing}$ (POINT (BOUNDARY or CONTAINER)$])]$

at school: P w szkole: R v škole

at the post office: P na poczcie. R na počte

at the town square: P na/przy placu miejskim: R na gorodskoi ploščadi

- "SpE at L-r-(object of activity)

$[_{Place}$ AT $([_{Thing}$ (BOUNDARY or CONTAINER)-OBJECT OF ACTIVITY D$]$

to sit at a table: P siedzieć przy stole: R sidet za stolom

* * *

It should be emphasized that the selection restrictions are considered here as part of the lexical entry. The preposition at, for example, would have to include at least

the following information:

$$\left[\begin{array}{l} \text{at} \\ \text{SpE COINCIDENT WITH PLACE OF L-r-POINT (Cent)} \\ \text{SpE FUNCTIONALLY ORIENTED TOWARD L-r-OBJECT OF ACTIVITY (Typ)(Cent)} \end{array}\right]$$

$$\left[\begin{array}{l} \left\{\begin{array}{l}\text{POINT}\\ \left\{\left(\begin{array}{l}\text{BOUNDARY or}\\ \text{CONTAINER}\end{array}\right)\right\}\end{array}\right. \\ \text{Place AT } \left(\left[\text{Thing}\left\{\left(\begin{array}{l}\text{BOUNDARY or}\\ \text{CONTAINER}\end{array}\right)\text{-OBJECT OF ACTIVITY}\right\}\right]\right) \end{array}\right]$$

Note that the selection restrictions for at and for all of the prepositions discussed represent mutually exclusive conceptualizations and are surrounded by { } accordingly. Since a given spatial scene may be conceptualized in more than one way (see section 3.1.3), a given situation may correspond to more than one selection restriction, but not at the same instant. The spatial schematizations that the different use types represent are disjunctive in nature (see section 2.1.3), and require a conceptual "quantum leap" to go from one (say, a bus as a SUPPORTING SURFACE in the bird on the bus) to another (a bus as a means of transportation, i.e. a LARGE VEHICLE, as in the passenger on the bus).

3.3.2 *The different parts/kinds of localizers involved*

The prepositions discussed express the relations summarized below.

(3.88)

$$\begin{array}{rl} \text{P, R, Eng} & \left\{\begin{array}{l}\text{INTERSECTION (INCLUSION)}\\ \text{CONTACT}\\ \text{ATTACHMENT}\\ \text{SUPPORT}\end{array}\right. \\ \text{P, R -} & \text{JUXTAPOSITION} \\ \text{Eng, colloq. P -} & \text{COINCIDENCE} \\ \text{Eng -} & \text{FUNCTIONAL ORIENTATION} \end{array}$$

The relations involve the parts of the Localizers listed in (3.89):

(3.89)

P, R, Eng { INTERIOR
BOUNDARY OF L-r

P { LATERAL BOUNDARY SURFACE/LINE OF L-r
BOUNDARY POINT/LINE OF L-r
POINT OF L-r

A few relations entail specific types of Localizers, namely:

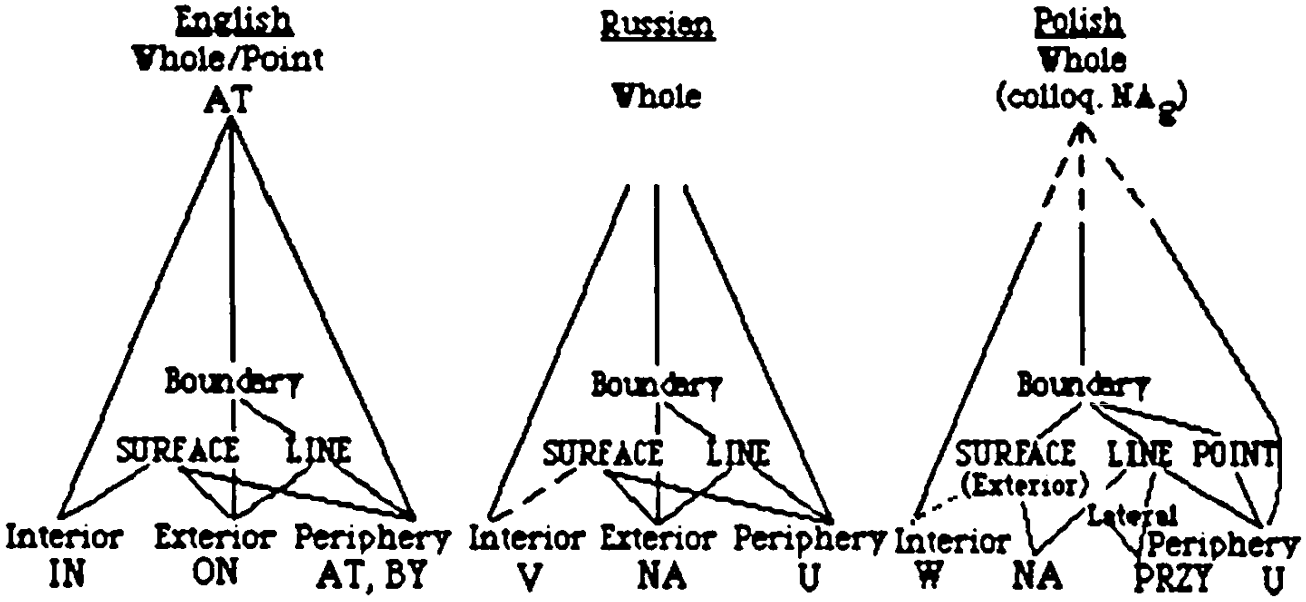
(3.90) P, R -- PLACE OF L-r-HUMAN
Eng, colloquial P -- PLACE OF L-r-POINT
Eng -- L-r-OBJECT OF ACTIVITY.

The nature of the various parts of L-rs (3.89) involved in spatial relations that these prepositions specify supports Talmy's (1983, 234) observation: in order to specify an object's location one needs to divide a space into subregions or segment it along its contours; however objects are not characterized as to just any properties of their physical makeup. "Instead, the objects are characterized almost solely by more qualitative or 'topological' properties such as their type of structural conformation, degree of subdivision ('partiteness'), number of relevant dimensions, boundary conditions, and symmetry vs. distinguishability of parts."

Recent works by Lakoff (1987) and Johnson (1987) support the fundamental status in human cognition of several of the relations and schematizations of Localizer-parts discussed in the present analysis. Lakoff, for example, discusses conceptual structure as arising from preconceptual experience. This preconceptual experience is based, in part, on what he calls kinesthetic image-schematic structure -- simple image schemas that constantly recur in our everyday experience. He includes (1987, 271-278) among these such schematic structures and relations as CONTAINERS (which in turn entail the elements INTERIOR, BOUNDARY, and EXTERIOR), LINKS (which relates to ATTACHMENT discussed above), PART-WHOLE, CENTER-PERIPHERY, and others. Johnson (1987), in turn, makes a strong case for the pervasive use of these schemas in human understanding (not just spatial cognition), and attributes this to the nature of our interaction with the world as a bodily experience.

(3.89) and (3.90) also show that Polish, Russian, and English structure space (in terms of direct location) somewhat differently by relying on different schemas of localizers via the specific prepositions that are available in each language. The following diagrams (inspired by Sysak-Borońska, 1980) compare which parts of a localizer the prepositions of direct location in each language relate to.

(3.91)



The interconnecting lines indicate areas of potential overlap in prepositional usage in a given language. For example, in relation to a "surface" there is overlap in Polish between the use of na and przy. The P translation for the buttons on the shirt could be

guziki przy koszuli or guziki na koszuli

depending on more specific relations (whether the surface is lateral and vertical or not, whether attachment or just support is implied; see section 3.1.4). And relation to a "line" in Polish may be expressed by przy or u:

P kołnierz przy marynarce / u marynarki: the collar on the coat.

In each of the three languages there is overlap in the use of in/w/v and on/na/na when referring to the interior of a surface. In English, however, in is more permissible with surfaces than v is in Russian, and even more so than w is in Polish (as discussed in 3.1.2). This difference is shown in the diagrams by the solid line between

INTERIOR and SURFACE in English versus the broken line between the two in Russian and Polish. The diagram for English also indicates the hyponymic relation between at and in, on, and by discussed in 3.1.2. Overall the diagrams support Miller and Johnson-Laird's (1976, 390) conclusion:

> Hence, like articles of furniture, but unlike color and kin terms, locative prepositions do not fall into a simple hierarchy of minimal contrasting sets. The differences between locatives are characterized primarily, though not exclusively, in terms of limited subdomains of search. When those subdomains happen to be mutually exclusive, the prepositions contrast, but mutually exclusive subdomains of search are not the rule.

3.3.3 *The major differences*

The following represent the major differences in usage between the three languages in this semantic domain.

-- Lack of P and R direct equivalents for at.

The relations of coincidence with the place of a Localizer that is point apprehensible, and of a possible functional orientation to the Localizer are not expressed by any preposition in P or R. Instead these languages relate other, more explicit aspects of the spatial scene for which at is used in English. At in fact has no counterpart in any language with which I am familiar. Cuyckens (1984a) titled his article on this preposition, "At -- A Typically English Preposition"; perhaps a more appropriate title would have been "A Peculiarly English Preposition."

-- Lack of English and P counterparts for R u.

In relation to non-human L-rs, R u has a very general spatial meaning of JUXTAPOSITION, and is applicable to a wide variety of L-rs. For expressing proximity, English has the close equivalent by, but by fails to capture the other use of R u (i.e. SpE COINCIDENT WITH PLACE OF L-r-HUMAN). In English one sometimes simply considers the relation as one of general direct location with at. The common translation equiva-

lents in Polish entail more specific relations than R u does, which brings us to the next point of difference between these languages:

-- Lack of R and English counterparts for P przy and u.

These two Polish prepositions express relations with L-rs that are defined quite specifically. Przy implies CONTACT with a *lateral boundary* which is conceived of as a surface or a line, with ATTACHMENT as a possible condition. With non-human L-rs, Polish u implies JUXTAPOSITION with a *boundary* conceived of as a point or a line, with possible ATTACHMENT TO A POINT OF L-r. None of the other prepositions examined here were found to express such specific relations of direct location, not even the common translation equivalents of przy and u : R u, na + L, and English at, by, on.

-- Specificity as to nature of ATTACHMENT.

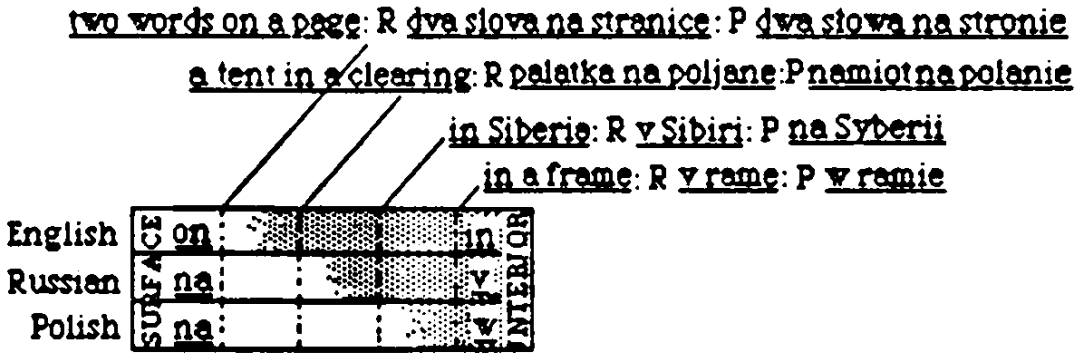
Of the R and English prepositions considered, only R na + L and on can express a relation of attachment. This attachment can be to the *boundary of L-r* and is not specified further by the semantic conditions. In P however, we have seen that na + L, przy + L and u + G may all express attachment. The prepositions differ by how specifically they express what SpE may be attached to: either to the *boundary of L-r* (na + L), a *lateral boundary-surface* or *lateral boundary-line of L-r* (przy), or a *point of L-r* (u). The greater number of prepositions in Polish expressing ATTACHMENT allows for finer distinctions in the nature of the attachment.

3.3.4 *On the categorization of Localizers*

In section 3.1.2 we saw that P and R have different criteria for determining the *interior* of a two-dimensional L-r. In Polish it appears that a salient *boundary* is necessary for a judgment of an *interior* of a 2-D L-r, whereas in English it appears the *interior* may be determined by a *boundary* or a *periphery*. The result was that in may be used in English with a broader range of L-rs than w + L can in Polish.

Russian seems to fall between these two extremes in its use of v • L. The effect that these different criteria for determining an *interior* have on the selection of translation equivalents across the three languages is illustrated below.

(3.92)



As Wunderlich (1982) observes, the difficulty in translating a preposition (or adjective) into another language is not that there is no appropriate equivalent for it, but rather that these words are not always used with the corresponding nouns in the other language in the same way The problem that remains for the foreign language learner/translator is to learn the differences between the language-specific categorizations of objects that are used as Localizers. This applies to the different schematizations specified in semantic conditions (e.g. whether a L-r can be classified as point apprehensible or not) and to the selection restrictions determining a preposition's applicability. In machine translation for example it would do one little good to know that P, R, and English use w, v, and in respectively in reference to an *interior* if *interior* is in fact determined differently in each of the three languages. Some guidelines for determination of the *interior* of 2-D L-rs were discussed above. Similarly, some of the factors that determine whether an object may be conceived of as a point were discussed in 3.2.1.1. It is clear, however, that a thorough classification of the different schemas that objects accept in the respective languages remains a subject for future study, a crucial step before one could even begin to make use of a comparative analysis such as this one in an application such as machine translation.

Chapter 4
Path-functions

4.1. Latives -- Dynamic equivalents to the prepositions of location

In the previous chapter we dealt with PLACE concepts. As discussed in section 1.4.2. the PLACE function as it is usually expressed by prepositional phrases (PPs) can be expanded with the following notation

$$[_{Place}\ x] \dashrightarrow [_{Place}\ \text{PLACE-FUNCTION}([_{Thing}\ y])].$$

As we have seen, THING is understood for our purposes in the broadest sense, i.e. referring not just to inanimate objects, but also to animate ones, including concrete as well as abstract "things" to which we may refer. Things comprise a conceptual category that is distinct from Places, Paths, Events, and others mentioned in 1.4.2

Within the class of spatial PPs, the most salient distinction is between those expressing [PLACES] and those expressing [PATHS].[1] A [PLACE] projects into a point or region, a [PATH], on the other hand, consists of a Path-function and a reference place, e.g. into the room can be represented with the conceptual structure

$$[_{Path}\ \text{TO}([_{Place}\ \text{IN}([_{Thing}\ \text{ROOM}])])].$$

The framework being used here for the analysis of Places and Paths is adapted from Jackendoff (1983, Chapter 9), but similar approaches have been taken by others previously. Miller and Johnson-Laird (1976) also treat Paths as a distinct conceptual category, and the embedding of Place functions in Path argument structure echoes Bennett's (1975) embedding of case phrases in other case phrases.

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[1]The term Path is used differently here than it is in Fillmore (1968) and Bennett (1975). What they refer to as "Path" is referred to here as Perlative spatial behavior.

4.1.1 *Different Path types in the Path role "traversal"*

The discussion in 4.1.2 - 4.1.3 will focus on Paths as they are traversed by a spatial entity. This will involve the context of a verb of motion or a verb entailing motion, what Jackendoff (1983) refers to as GO verbs, as opposed to BE verbs which may express Location. He proposes (p. 172) that BE verbs take the following conceptual structure, expressing a state:

$$[_{State}\ BE\ ([_{Thing}\ x],\ [_{Place}\ y])].$$

GO verbs, on the other hand, express an Event-function, something which can be paraphrased "that ... happen," and may be said to fit the following conceptual structure (ibid., p. 172):

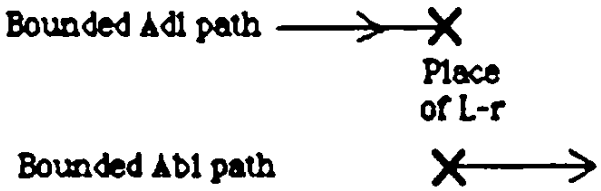
$$[_{Event}\ GO\ ([_{Thing}\ x],\ [_{Path}\ y])].$$

As mentioned in the Introduction, Paths can be classified according to three different modes of spatial behavior that they may represent: **adlative** (Adl), in which the motion leads to a decrease in the distance between the SpE and its Localizer (this may also be termed a "goal-path"); **ablative** (Abl), in which the motion leads to an increase in the distance between the SpE and its L-r (a "source-path"); and **perlative** (Perl), in which the motion involves the displacement of the SpE within the Place of L-r. This terminology stems from Weinsberg (1973) and Sysak-Boronska (1978). I will sometimes refer to Adl, Abl, and Perl collectively as Lative spatial behavior (as opposed to Location, i.e. Locative (Loc) spatial behavior). Note that there are lexical reflexes of the four modes of spatial behavior in the interrogative adverbs in many languages, including the three under study here:

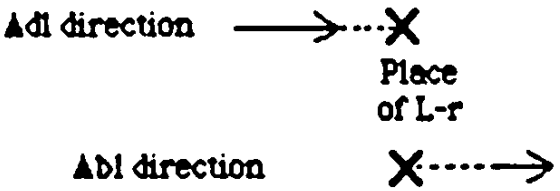
Modes of Spatial Behavior	English	Polish	Russian
Locative:	where	gdzie	gde
Adlative:	where to	dokąd	kuda
Ablative:	where from	skąd	otkuda
Perlative:	which way	którędy	kak, kakim putem

The Paths may not only be characterized as to how they are traversed, but also

(as Jackendoff: 1983, 165 observes) as to the "path type." Jackendoff points out three types: bounded paths, directions, and routes. In **bounded paths**, the (Place of) L-r is an endpoint of the path -- the beginning in an Adl path, and the end in an Abl path. We will see that the common exponent of a bounded Adl path in English is to; that of a bounded Abl path is from. I propose the following diagrams as another way of understanding this Path type:



In the second class of Paths, **directions**, the Place of L-r does not fall on the path, but would if the path were extended some unspecified distance. Like bounded paths, the class of directions can be subdivided according to the mode of spatial behavior: either Adl or Abl. The exemplar preposition for an Adl direction in English is toward, while for the Abl direction it is away from. I will diagram directions as follows.



In the third class of Paths, **routes**, the Place of L-r is related to some point in the interior of the path. Nothing is specified about the endpoints of the motion. Although they will not be discussed in depth here, routes take the Path role of Perlative traversal. The English preposition via exemplifies this Path type.

We will begin the semantic analysis of prepositions which express Adl Path-functions using this taxonomy of Paths and will see later if other Path types need be considered to account for the meanings of the different prepositions to be considered here. For now we may sum up the taxonomy of Path types and the modes of spatial behavior in which they occur as follows:

Path type	Mode of Spatial Behavior
bounded paths, directions	Adl or Abl
routes	Perl

4.2 Adlative Paths

4.2.1 *To*

In past analyses, Leech (1969) and Sysak-Bornńska (1975), and others have considered the preposition to as a motional counterpart of at. This is an approach which might be represented in the terms of the present study as [$_{Path}$ TO ([$_{Place}$ AT ([$_{Thing}$])])]. But this does not coincide with the data in several respects. For example, it does not follow from Tom pushed Bill to the ground that, as a result, Bill is at the ground. Here the Loc counterpart would be on. It appears that to does not entail point-apprehensibility of the Localizer as at does. As noted in 3.2.4, humans as Localizers are not point-apprehensible and as a result are not usually combined with at: (*He was at Fred); to-constructions are, however, extremely common with humans as L-rs, e.g., Simon went home to his wife. It appears that to has a much wider application than at, and has many Loc counterparts.

I believe that Bennet is correct in his assessment of a very general meaning of to as "goal". It takes a very general path endpoint which may simply be specified as the Place of L-r, thus having the argument structure

[$_{Path}$ TO ([$_{Place}$ ([$_{Thing}$])])].

I propose the following as semantic conditions in the lexical entry of to:

$$\begin{bmatrix} \text{ADL PATH - BOUNDED (Nec)} \\ \text{PATH ENDPOINT - PLACE OF L-r (Cent)} \end{bmatrix}.$$

The latter is a graded condition since the applicability of to decreases as the endpoint of the path is further "off the mark" of the Place of L-r.

Because the meaning of to is quite general, it has many counterparts in Polish and Russian, which will be discussed below. It is worth mentioning here, however, that

Polish na of general location (na_g) is growing in usage not just in the Loc sense in colloquial Polish, but in the Adl as well. Sysak- Borońska (1980, 71) notes the following example where na_g + Acc may also be said to express the general Adl Path structure [Path TO ([Place ([Thing])])]:

(4.1) P Zaciekajcie, pobiegne na magazyn. (n.b. the Loc form - w magazynie):
Wait, I'll run to the storage room.

(4.2) P Zanies te informacje na komputer.: Take this information to the computer.

And the following sign is sometimes seen outside of Polish stores:

(4.3) P Wejście na sklep tylko z koszyczkiem. (Loc: w sklepie):
(Literally, Entrance to the store only with a basket.)
You must take a basket to enter the store.

Again, this usage of na is not found in Russian.

(4.1)a ...v sklad

(4.2)a ...k kompïuteru

(4.3)a Vkhod v magazin.

4.2.2 *Toward(s)*

As mentioned in 4.1.1, toward[1] is a clear representative of the Path type "direction", in that it describes a path in the direction of the L-r without implying that the path reaches it. Since for directions the path endpoint is not coincident with the Place of L-r, but would be if the path were extended some unspecified distance, we can only describe the path's "would-be" endpoint. Toward, then, entails the following conditions:

$$\begin{bmatrix}\text{ADL PATH - DIRECTION (Nec)}\\ \text{WOULD-BE ENDPOINT: PLACE OF L-r (Cent)}\end{bmatrix}$$

which fit the conceptual structure

[1] In British English, towards is the more common form, toward being considered stylistically marked as provincial or dialectal (Lindkvist: 1976, 199). In American English both forms appear, with toward perhaps more common. As per American usage, the two forms will be used here interchangeably.

[Path TOWARD ([Place ([Thing])])].

The usual Russian translation equivalent is k + Dative (D):

He edged toward the door.: R On probiralsia k dveri.

R k + D will be discussed further in section 4.2.4 with P/R do + G.

One Polish translation equivalent of R k + D and of toward is ku + D:

The carts are going towards the village.: R Vozy edut k derevne.: P Wozy jada ku wsi.

However, unlike R k + D, Polish ku + D has a somewhat bookish flavor and is often replaced by "w strone + G".

to go towards the station, toward the river: R poiti k stancii, k reke:
P pojsc w strone stacii, w strone rzeki

Bogusławski and Karolak (1973, 156) note that the expression "w strone + G" is, however, a bit too compound for frequent usage in spoken Polish, and that in many cases one simply would not specify in Polish whether the goal involved was reached or not, whereas in Russian, as a rule, one would. Their Polish example, Pobiegł na przystanek, is a sentence capable of describing situations which in Russian would be differentiated as either On pobežal na ostanovku or On pobežal k ostanovke. Similarly, P pojechać nad morze may be translated either

to go to the sea	or	to go toward the sea
R pojekhat' na more		R pojekhat' k moriu.

While I propose R k + D and P ku + D have the same semantic conditions for their use as English toward, P ku has a smaller realm of application than do R k or English toward. This is a result of the broader function that other Adl prepositions such as w/na + Acc and do + G have in Polish as compared with into and onto in English or v/na + Acc in Russian.

4.2.3 *On(to), P na/ R na + Acc; In(to), P w/ R v + Acc, (P do + G)*

The following sets of prepositions are commonly accepted as being translation equivalents across the three languages:

English	Polish	Russian
onto	na + Acc	na + Acc
into	w + Acc (sometimes do + G)	v + Acc

and are commonly accepted as Adl counterparts of the respective Loc prepositions:

on	na + L	na + L
in	w + L	v + L.

While this may hold as a gross generalization, it is not accurate across the board. Below we will try to shed light on the many cases in which the usage of "translation equivalents" seems to differ arbitrarily across the three languages.

Section 3.1.3 pointed out many cases where the usage in English, Polish, and Russian could not be predicted from the sets of "common translation equivalents," i.e. the set in, P w/ R v + L, and the set on, P na/ R na + L. It should be noted that the choice of the Adl prepositions follows (for the most part) from the form of the Loc preposition used. Thus given the following Loc preposition + noun collocations:

in Siberia: P na Syberii. R v Sibiri

the Adl counterparts are normally

into or to Siberia. P *na* Syberię. R *v* Sibir'

This has led to the analysis that the Adl forms contain the respective Loc forms as an embedded function, as in Gruber (1965). Bennett (1975) gives the following analysis for English:

in: locative interior	on: locative surface
into: goal locative interior	onto: goal locative surface.

This would translate into the notation used here as

into: $[_{Path}$ TO $([_{Place}$ IN $([_{Thing}\ ])])]$ onto: $[_{Path}$ TO $([_{Place}$ ON $([_{Thing}\ ])])]$.

(The Path-function TO is used to represent an Adl bounded path.) Such an analysis would also explain the coordinate usage of Loc and Adl prepositional forms in Russian,

and often Polish, quite well, and may be represented by the following structure.

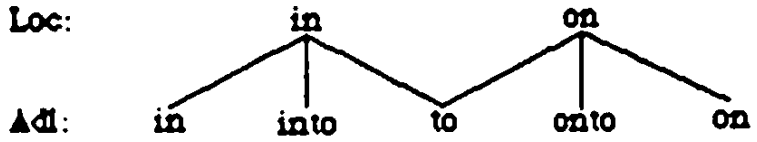
P w • Acc: [Path TO ([Place W ([Thing])])] P/R na • Acc: [Path TO ([Place NA ([Thing])])]
R v • Acc: [Path TO ([Place V ([Thing])])]

We will see that this is not completely accurate for Polish since do • G is also often an Adl counterpart of the Loc w • L.

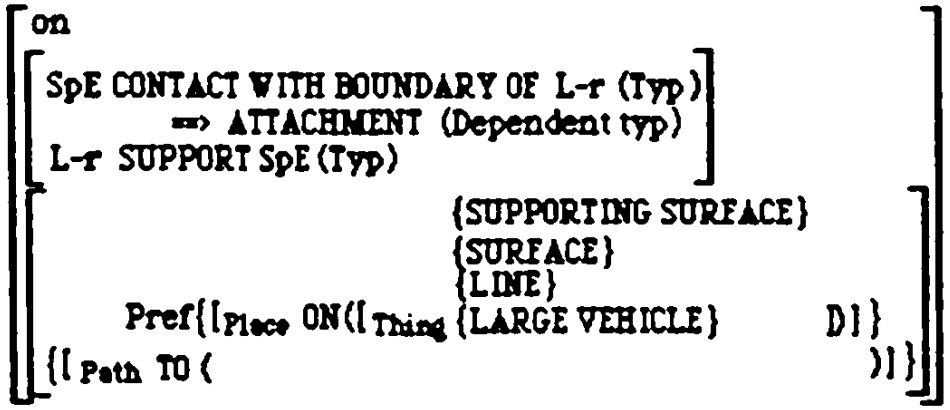
This approach also presents some problems in the analysis of the Adl counterparts of English in and on. As Lindkvist (1976, 52) observes, it is safe to say that when into is used to get somewhere, you are in when you're there, but to say the reverse often falls short. The Adl paths into, to, or in a place may all result in location in that place. Similarly Loc on may have the Adl counterparts onto *or* to or on. Although the Place reading is preferred for in and on, they can also take a Path reading in certain constructions. Note the ambiguity of in and on between Place and Adl Path readings in the following sentences (from Leech 1969, 192):

She jumped on the table.
I pushed my sister in the water.

Thus we have the following many-to-one relationships for English.



It appears that a Path argument may play a role in the semantic structure of on and in in some cases, but not in all, i.e. *in the manner of a preference rule system*. I propose then that Place and Path arguments can also have preference rule characteristics, here as mutually exclusive possibilities, where the Place reading is the preferred one, that is, it should be considered the more heavily weighted option. I will mark this favored option below as **Pref**, and propose that Path be included in the lexical entries of on and in as exemplified in the following entry for on.



We will consider below whether the Adl Path reading of on and in is, in fact, just as applicable in all of the use types discussed in 3.1.1 and 3.1.2 as the Place reading is.

We have now seen that in and on may designate a Place (Loc) or an Adl Path. However, the two prepositions are not used interchangeably with into and onto in all situations. Note the following examples.

(4.4) a.) He placed the map on the table.

b.) Ginny put the letter in an envelope.

c.) We want to hang your painting on that wall.

d.) Robin Hood turned and walked into the forest.

e.) The crowd cheered as the star athlete ran onto the track.

An adequate semantic analysis of these prepositions should account for the fact that in a. - c., on and in are not freely interchangeable with onto and into, and that in d. and e., the sentence would have a Loc reading rather than an Adl reading if into or onto were replaced by in or on. If onto/into are used in a. - c. it sounds redundant or overemphatic. Furthermore it is worth noting that the verbs in a. - c. are verbs of positioning, which may be said to conceptualize CAUSE TO GO. Jackendoff (1983) proposes that CAUSE verbs contain an embedded Event in their conceptual structure. He represents this (p. 175) as follows:

(4.5) $[_{Event}\ \text{CAUSE}\ ([_{Thing}\ x]\ ,\ [_{Event}\ y])]$.

In some cases (e.g., the verbs put, throw), the embedded Event is GO (ibid.). For the

verbs of positioning in a. - c. (place, put, hang) and surely others. I propose the embedded GO Event must entail an embedded Adl bounded path (i.e. TO) Thus for these verbs, the conceptual structure of (4.5) may be expanded as follows:

$$[_{Event}\ CAUSE\ ([_{Thing}\ x]\ ,\ [_{Event}\ GO\ ([_{Thing}\ y]\ ,\ [_{Path}\ TO\ ([_{Place}\ ([_{Thing}\ z])])])])])].$$

This would account for the fact that a. - c. intuitively entail motion "to somewhere", yet do not require the Adl prepositions into/onto: the Adl Path function is lexicalized in the verbs themselves. The fact that these verbs do not simply entail a generic Path argument can be seen in the unacceptability of a FROM Path (Abl path) in the following:

*He placed the map from the wall. (rather. ...took...from...)

*Ginny put the letter out of an envelope (rather. ...took...out of...)

*We want to hang your painting off of that wall. (rather. ...take...off of)

The "corrected" examples in parentheses indicate that the Abl path can be expressed by the verb take

Examples (4.4) d and e clearly present a different situation. Rather than verbs of positioning (and thus of CAUSE events), we have here verbs of motion which express GO events. While these verbs entail Path functions, they are not limited to Adl path functions: one can walk or run *to*, *from*, or *through* something. Rather, the Path function seems to be open. Thus the argument structure of GO verbs is given as:

$$[_{Event}\ GO\ ([_{Thing}\ ]\ ,\ [_{Path}\ ])].$$

Again, an understanding of the conceptual structure of the verbs helps clarify the functioning of the prepositions. Since the verbs in d. and e. leave the Path function open, the prepositions into/onto specify it as an Adl path. Since with in/on the Place (Loc) reading is the preferred one (see above), in/on are not as well suited to indicate an Adl path in d. and e., the Loc reading would come to the fore, cf.:

(4.4) f.) Robin Hood turned and walked in the forest.

g.) The crowd cheered as the star athlete ran on the track.

In f. and g. the in/on PP functions as a Place adverbial construction, outside the argument structure of the verb of motion, as represented by the following:

[Event GO ...] , [Place IN/ON ([Thing])].

This ambiguity between Loc and Adl readings does not arise with the Russian and Polish counterparts of in and on. Adl motion is expressed with the common translation equivalents v/na + Acc in Russian, and w + Acc or do + G and na + Acc in Polish. (In addition, prefixed forms of the verbs of motion in Slavic usually reinforce the notion of Adl, Abl, or Perl motion.) Particularly in R, if there is any notion of motion TO somewhere, the Adl forms of the prepositions must be used. This is not always the case in Polish. It is interesting to note that again the verbs of positioning present a special case. Much like in English, the verbs of positioning in Polish do not normally take an Adl form of these prepositions (preposition + Acc), but a Loc one:

P stawiac naczynia na stole: to set the dishes on the table

P sadzac kogos na krzesle, w fotelu: to seat someone in an armchair.

This indicates that perhaps the verbs of positioning in Polish lexicalize the Adl path (the TO function) like their counterparts in English. Russian however does require an Adl PP with verbs of positioning, e.g.,

R stavit' posudu na stol : sazat' kogo-libo na stul, na kreslo

It seems then that these verbs in R do not lexicalize a TO function, but may instead have a selection restriction on the PP that follows, requiring *it* to lexicalize the TO function -- something like the following structure:

[Event CAUSE ([Thing x] , [Event GO ([Thing y] , [Adl Path - Bounded ...])])].

Let us turn to the individual use types of on/P na/R na and in/P w/R v discussed in 3.1.1 and 3.1.2 and see if they are also expressed by the Adl counterparts of these prepositions. First, the use types of on/P na/R na.

4.2.3.1 *The use types of on/ P na/ R na in the Adlative*

- "SpE supported by L-r"

to put a hat on your head: P wsadzić kapelusz na głowę: R nadeť šliapu na golovu

Put the magazines on the shelf above the books.: P Połóż pisma na półkę nad książkami.: R Položi žurnaly na polku nad knigami.

The examples show that the Adl counterparts may appear in the use type, but again the verbs of positioning in English and Polish may restrict the usage to Loc forms. In Polish this is especially true if the "goal" of the path is one that could be easily anticipated from the context.

to put the bread on the table: P położyc chleb na stole (Loc).

The Adl phrase is used however in a more emphatic sense, to indicate a goal that is not necessarily obvious from context, and to underscore that a relation of contact is to be established

Put the plate on the shelf!. P Postaw talerz na półkę! (Adl).

In Russian, verbs of positioning as a general rule take Adl PPs:

R położiť khleb na stol; Postav' tarelku na polku!

- "SpE attached to L-r"

The verbs which indicate the process of attaching one thing to another are even more likely to be verbs of positioning than was the case in the previous use type. As a result, while Russian uses Adl forms of the prepositions, English and Polish are more likely to retain the Loc forms.

to hang a picture on the wall: P powiesić obraz na ścianie: R povesiť kartinu na stenu

to put a stamp on an envelope: P nakleić znaczek na kopercie or na koperte: R nakleiť marku na konvert

- "SpE contiguous with L-r"

Situations where a spatial entity becomes contiguous with a L-r without entailing its support arise less often in the context of Adl spatial behavior than do the other

use types mentioned above. Nevertheless, the examples below indicate that in Adl contexts this use type would take Adl counterparts of on/P na/R na. From Bogusławski and Karolak (p. 155):

P Film wszedł na ekrany kin stołecznych.:
R Fil'm vyšel na ekrany stoličnykh kinoteatrov
(The film has been released [more literally: has come out on the screen]
at the capitols' theaters.)

Also, in English: to shine a light onto a wall.

• "SpE attached to L-r-perimeter"

Because of its usual role -- in reference to large, permanently situated objects -- this use type is extremely uncommon in Adl contexts. At best it offers peripheral examples of Adl spatial behavior for which it is difficult to apply native intuitions about usage Examples for it will not be considered crucial to the realm of usage of the Adl prepositions

• R "SpE na L-r-function"

This use type appears quite commonly in Adl contexts:

to go to a concert: R pojti na koncert: P pojść na koncert.

• "SpE transported by L-r-vehicle"

English follows the selection restriction of requiring a "large vehicle" for the use of on, and usually expresses the motion with the verb get:

to get on a bus, a tram

but: to get in a car.

In a more formal style the motion and path may be lexicalized by to board in reference to "large vehicles", e.g. to board the train, the plane.

Russian employs na + Acc in this use type in the Adl with "vehicles":

R sadit'sja/sest' na avtobus, na tramvai

except when the choice of the preposition is otherwise determined by the syntactic constraint imposed by the verb vkhodit'/vojti. This verb requires the mandatory cate-

gorization of the vehicle as a "container", and the use of the preposition v + Acc:

R vkhodit'/voiti v avtobus, v tramvai.

Polish does not show this use type, maintaining the categorization of vehicles as "containers", and using (as explained below) do + G:

P wsiadać/wsiąść do autobusu, do tramwaju

P wchodzić/wejść do autobusu, do tramwaju.

4.2.3.2 *The use types of in/P w/R v in the Adlative*

• "SpE in L-r-container"

This is perhaps the most stereotypical use type for this set of prepositions in the Loc, so it is interesting that while English and Russian use the predictable Adl counterparts into and v + Acc, Polish uses do + G.

(4.6) to put something in your pocket: R položit' čto-libo v karman
P włozyc cos do kieszeni

to pour milk into a cup: R lit' moloko v kružku: P lać mleko do kubka

The conceptual structure of this use type is represented below with the lexical equivalents in each language. The subscript "$_{\text{Thing-container}}$" in the bracket [$_{\text{Thing}}$] is simply a way of indicating the selection restriction for this constituent and is interchangeable with the notation [$_{\text{Thing}}$ CONTAINER] of Chapter 3.

(4.7) Eng "SpE into L-r-container": IN
R "SpE v L-r-container + Acc": [$_{\text{Path}}$ TO ([$_{\text{Place}}$ V ([$_{\text{Thing-container}}$])])]
P "SpE do L-r-container + G": W

• "SpE to L-r-container"

Polish, with its distinct lexicalization of this use type in do + G reflects just how broad the application of the categorization of L-r as "container" is in different contexts, cf.:

(4.8) R Ona každyi den' khodit v školu: P Codziennie chodzi do szkoły

R Letom on poiedet v Moskvu: P Latem poiedzie do Moskwy

Note however that there is something that differentiates the examples in (4.6) from those in (4.8). Namely in (4.6), the Adl paths R v • Acc and P do • G imply the end result of having the SpE *in* L-r, i.e. R v • L and P v • L. This is not the case in (4.8) since here physical entering is not the issue. It seems these examples represent a general Path akin to that of English to, with a general endpoint: the Place of L-r. Not surprisingly the examples (4.8) may be translated in English with to, but not with into:

(4.8)a She goes to school every day (*into school)

He is going to Moscow this summer. (*into Moscow).

What we have is a second application of this selection restriction on L-r (that of CONTAINER) in P and R. The conceptual structure for this second use type of R v • Acc and P do • G may be represented:

$$[_{Path}\ TO\ ([_{Place}\ ([_{Thing\text{-}container}\ ])])].$$

This represents a bounded Adl path to the Place of L-r-"container" It corresponds to the conceptual structure of English to, with the exception that to is not limited to use with Localizers categorized as "containers". This use type in Polish and Russian also corresponds to the usage of to in that it is more common when the speaker assumes a more distant view of the L-r, when the physical act of entering is not greatly stressed (as Lindkvist: 1975, 51 observes for English). In this "distant view", the details of the path endpoint are not where the focus is. In other words, the endpoint of the path is not specified by the Place function. This is reflected above in the conceptual structure by an open Place function in the Path argument.

Note the difference between the present use type and the following examples where the previous use type, "SpE in L-r-container", is used in the Adl.

They walked into the school.: R Oni vošli v školu.: P Weszli do szkoły

The Adl use of "SpE in L-r-container" underscores the physical act of entering something. We will call this the "close up" view of the action. This use type is reinforced lexically in Slavic with the verbal prefix P v-/ R v- to express the conceptual structure

given in (4.7).

In English the Path- and Place-functions may both be lexicalized in the verb, e g. enter, (Jackendoff: 1983, 183) as

$$[_{Event}\ GO([_{Thing}\ x],[_{Path}\ TO([_{Place}\ IN([_{Thing}\ y])])])]$$

as in

to enter an apartment: R vojti v kvartiru: P wejść do mieszkania.

Other uses of P do + G will be discussed in the following section.

- "SpE embedded in L-r-(filled solid)"

Since this use type inherently involves a close-up view of L-r, to is rare in the Adl. with in and especially into appearing as the common Adl counterparts. Polish also differentiates this use type from the previous two with w + Acc. Russian maintains v + Acc:

to put a spoon in the soup: P kłasć łyżke w zupę R klast' ložku v sup

to jump into the fire: P skoczyc w ogień R prygnut' v ogon'

Sysak-Boronska (1980, 52-53) cites the following Polish examples which illustrate quite well the difference between the Adl of this use type and of the type "SpE in L-r-container"

P wbić gwozdz w drzewo: R vbit' gvozd v derevo: to hammer a nail into wood (filled solid)

versus

P włożyc gwożdz do pudełka: R vložit' gvozd v korobku: to put a nail in a box (container).

- "SpE-(a part) included in L-r-(the whole)"

This type receives only peripheral usage in the Adl. The notion of something entering into a relationship of being habitually connected to another is not an overwhelmingly strong one It is difficult one to have native intuitions for, and I will not dwell on it here

- "SpE-person in L-r-institution"

This is also not a strong notion in the Adl, but does sometimes occur, as in the

following example, suggesting the categorization of abstract institutions as "containers":

to put someone in prison: P wtrącić kogoś do więzienia: R zakljuc'it' kogo-libo v tjurmu.

Note the relation of this use type to "SpE in L-r-container" reflected in the use of Polish do + G.

• "SpE-person in L-r-clothing"

Polish, Russian, and English each maintain the expected Adl counterparts for this use type:

to get dressed / to dress someone in a black suit, in a red dress:
R odet'sja / odet' kogo-to v černyj kostjum, v krasnoe plat'e:
P ubrac sie / ubrac kogos w czarny garnitur, w czerwona sukienke.

4.2.4 *P do + G; R do + G, k + D*

So far we have seen the following uses of P do + G.

as $[_{Path}$ TO $([_{Place}$ W$([_{Thing\text{-}container}\ ])])]$, e.g., P wejść do pokoju: to go into a room,

and as $[_{Path}$ TO $([_{Place}([_{Thing\text{-}container}\ ])])]$, e.g., P pojechać do Anglii: to go to England.

Another use of P do + G is as an Adl counterpart of P u + G in the use type "SpE coincident with Place of L-r-human".

P Przyjechali do nas w odwiedziny: They came to our place for a visit.

In Russian the Adl counterpart of this use type for R u + G is expressed by k + D:

R Priekhali k nam v gosti.

Thus the Polish and Russian Adl counterparts of this use type express the conceptual structure $[_{Path}$ TO $([_{Place}([_{Thing\text{-}human}\ ])])]$.

Note that for R k + D this is the only use type in which it may express an Adl bounded path. It otherwise expresses an Adl path-direction.

P do + G can also express another Path type, represented in the following examples:

(4.9) P Wreszcie dotarł do drogi.: At last he came to the road.

P Ten autobus nie dochodzi do tej mieiscowości.: That bus doesn't go to that place.

Here P do + G indicates the border or limit of the designated movement. The Path endpoint is the outer edge of the Localizer. This Adl Path type is also lexicalized separately in Russian as do + G and constitutes the sole use of R Adl do + G:

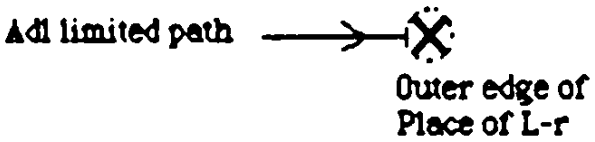
(4.9)a R Nakonec on dobralsia do dorogi.

R Etot avtobus ne dokhodit do etogo mesta.

I will introduce a new Path type for P/R do + G, the **limited path**. The limited path is incorporated in the lexical entries of P/R do + G as follows:

$$\begin{bmatrix}\text{ADL LIMITED PATH (Nec)}\\ \text{ENDPOINT - BORDER OF L-r (Nec)}\end{bmatrix}.$$

The limited Path type may be diagrammed as follows:



E g., P Dotarliśmy do granicy: R My dobralis' do granicy: We made it to the frontier
(We reached the frontier.)

This Adl Path type does not have a unique lexicalization in English, but is expressed variously as to, as far as, up to, or in the verb, as in reach.

Looking at the Slavic prepositions above as Adl counterparts of Loc prepositions, we have seen that P do + G is sometimes a counterpart to P w + L, but is not limited to that role. It often serves as the Adl counterpart to P przy + L / u + G:

P siedzieć przy stole; siąść do stołu:
to be sitting at a table; to sit down at a table

P stać przy oknie; rzucić się do okna:
to stand by the window; to rush to the window.

Similarly the Adl counterpart to R u + G is usually R do + G, but may sometimes be k + D as well, as a result of wide application of this preposition in Russian. One could say that R u and P przy/u have these prepositions as Adl counterparts by default since unlike

the prepositions in 4.2.3, P do and R do/k basically do not have the Loc prepositions as embedded Place functions in their Path argument structure.

4.2.5 *At*

We noted in 4.2.1 that to is not exactly "the Adl of at"; rather than having AT embedded in its conceptual structure, to seems to leave the type of path endpoint unspecified (as simply "Place of L-r"). However at itself is sometimes used in an Adl sense, as in the following:

(4.10) a.) to shoot at a target

b.) to spit at somebody, something

c.) to throw stones at someone

This usage does seem to reflect the point-apprehensibility of the L-r that is required for at in the Loc sense. The motion involved is on a path to the L-r as a whole (as a point), and the resultant impression is of motion about to overwhelm the L-r-as-target. This Adl use of at will be represented as $[_{Path}$ TO $([_{Place}$ AT$([_{Thing}\ ])])]$.

Whereas people are not normally considered point-apprehensible (e.g. *The book was at John.), in this usage (of at as Adl) they are: this is allowed by the conceptualization of the person as a target-thing rather than as a HUMAN, cf.

She threw the ball to Tony versus She threw the ball at Tony

In Slavic there is no direct equivalent of at in the Adl as there is none in the Loc. Various Adl prepositions take its place:

(4.10) a.) P strzelać do celu: R streliat' v cel'

b.) P pluc na kogoś/coś: R plevat' na kogo-/čto-libo

c.) P rzucać kamieniem na/w kogoś[1]:

---

[1]Bąba (1987) notes the tendency in modern Polish to use w rather than the older form na in such constructions. He points out it has even resulted in a change in more recent Polish translations of the Bible. Whereas older versions have the famous line in John 8:7 as "Kto z was iest bez grzechu, niech pierwszy rzuci na nia kamień," in more recent translations it is rendered as "...w nia kamieniem." Similarly the older construction

(c.) R brosit' kamen' (kamnem) v kogo-libo.

Interestingly examples b. and c. show that even without an at in Slavic it is possible to translate the phenomenon of viewing the L-r-person as a thing by using different Adl prepositions than the ones normally used for HUMANS, i.e. P w/na kogoś, R v kogo-libo rather than P do kogoś / R k komu-libo.

4.2.6 *Summary*

Below is a summary of the Adl prepositions discussed in this chapter, indicating for each the Path type it expresses ("bounded path" for most of them, indicated by the function TO), the argument structure it entails (whether it contains a specific embedded Place function or an open Place function), the selection restrictions for its use (if applicable and if different from those given previously for the Place functions), and any new semantic conditions not discussed in Chapter 3. The entries for on, in, and at below repeat the Loc part discussed in Chapter 3 in order to show how the Loc and Adl roles may both be represented in the same lexical entry as preference options.

to:

```
[to
 [ADL PATH - BOUNDED (Nec)
  PATH ENDPOINT - PLACE OF L-r (Cent)]
 [Path TO([Place([Thing DD]
```

on:

```
[on
 [SpE CONTACT WITH BOUNDARY OF L-r (Typ)
       ⇒ ATTACHMENT (Dependent typ)
  L-r SUPPORT SpE (Typ)]
 [                          {SUPPORTING SURFACE}
                            {SURFACE}
                            {LINE}
    Pref{[Place ON([Thing {LARGE VEHICLE}      D]}
  {[Path TO (                                  )]}]]
```

---

ciskać/cisnąć czymś na kogoś/coś (to hurl something at someone or something) has been replaced in current speech by a construction with w kogoś/coś.

P na + Acc:
Eng onto:
R na + Acc:

[Path TO ([Place NA ON([Thing D])] NA)]

P nag + Acc:

[Path TO([Place([Thing DD]

in:

[in [SpE INTERSECT INTERIOR OF L-r (Nec)] [[Pref{[Place IN([Thing {CLOTHING} {INSTITUTION} {FILLED SOLID} {CONTAINER} D]} {[Path TO ( )]}]]]

into:

[Path TO ([Place IN([Thing D])]

P w + Acc.

[Path TO ([Place W ([Thing {CLOTHING} {FILLED SOLID} D])]

R v + Acc:

[Path TO ([Place {([Thing CONTAINER D)} {V([Thing D}])]

R do + G:

[do [ADL LIMITED PATH (Nec) ENDPOINT - BORDER OF L-r (Nec)] [Path-limited ([Place([Thing DD]]

P do + G:

[do {[Path TO ([Place ([Thing {HUMAN} {CONTAINER} D])])]} {[[ADL LIMITED PATH (Nec) ENDPOINT - BORDER OF L-r (Nec)]] [[Path-limited ([Place([Thing DD]]}]

R k + D:

[k
{[Path TOWARD ([Place([Thing D])]}
{[Path TO ([Place ([Thing HUMAN D])])]}]

Eng. toward / P ku + D:

[Path TOWARD ([Place([Thing D])]

at:

[at
[SpE COINCIDENT WITH PLACE OF L-r-POINT (Cent)
SpE FUNCTIONALLY ORIENTED TOWARD L-r-OBJECT OF ACTIVITY (Typ)(Cent)]
[{POINT}
((BOUNDARY or CONTAINER))
Pref{[Place AT ([Thing((BOUNDARY or CONTAINER)-OBJECT OF ACTIVITY} D])}
{[Path TO ( )]}]]

- Some major differences

-- The ambiguous lexicalization of Location and Adl motion in English.

The analysis provides more concrete evidence for Bennett's (1973), Sysak-Borońska's (1975), and Jackendoff's (1983) claims that relative motion is not an unambiguously lexicalized category in English. Rather, spatial prepositions in English can commonly express a Place and a Path argument structure (cf. other prepositions too such as <u>under</u>, <u>over</u>, <u>in front of</u>, <u>in back of</u>). This fact becomes especially apparent in comparison with Slavic languages such as Polish and Russian, which lexicalize the difference between Location and (here) Adlative motion much more distinctly, with different surface case forms or with different prepositions. And as the examples with the verbs of positioning in 4.2.3 indicate, Russian is even more consistent than Polish in the use of Adl phrases with the prepositions examined when the context entails any sense of motion.

The analysis also shows preference rule traits in word meanings in terms of the Place or Path arguments. This is an additional application of preference rules beyond those proposed in Jackendoff's *Semantics and Cognition*. This also provides further evidence of the greater explanatory adequacy of a cognitive approach to semantics as opposed to an objectivist approach that would require necessary and sufficient conditions to describe word meanings.

--The broad use of P do • G.

The basis of the broad use of P do • G as compared with R do • G becomes apparent when one compares the several applications possible for P do (as a limited path, or as a bounded path with CONTAINERS or HUMANS as path-endpoints) versus the single application of R do (as the exponent of the limited Path type). As observed earlier, English does not have a unique lexicalization of the limited Adl Path type as Russian and Polish do.

Chapter 5
Concluding issues

5.1. On how English, Polish, and Russian structure space

In his 1983 article "How Language Structures Space," Talmy discusses "the structure that is ascribed to space and the objects within it by linguistic 'fine structure,' that subdivision of language which provides a fundamental conceptual framework" (p. 225). He characterizes the fine-structural level of language as that of closed-class forms, including grammatical elements and categories, closed-class particles and words. Specific examples of this set of elements would be verbal inflections for tense, pronouns, and also prepositions -- linguistic elements which are relatively small in number and fixed in membership. These can be contrasted with open-class elements, such as nouns and adjectives, which are large in number, can add new members rather readily, and can convey conceptual content of any sort. Closed-class elements, however, refer to a limited array of conceptual material (e.g. space, time, perspective-point, causation), and in fact only to particular aspects of those domains. Talmy states (p. 228) that in effect "the closed-class forms of a language taken together represent a skeletal conceptual microcosm."

Since prepositions are an important subgroup of closed-class forms, we will consider here some of Talmy's claims in light of the conclusions drawn above in Chapters 3 and 4. Specifically we will focus on the disjunct nature of alternative schematizations at the fine-structural level and the consequences this has for the representation of spatial situations.

As noted in the summary of Chapter 3 (section 3.3.2), the set of closely related prepositions in each of English, Polish, and Russian that were discussed subdivide the

localizing area; they refer to different parts of the Localizer (e.g. the interior, boundary, lateral surface). These different spatial schemas do not represent a continuum (say, where each one differs from the next by a simple feature). Rather, each schema differs from the others by a number of features simultaneously. This observation supports Talmy (1983, 269) who notes, furthermore, that a disadvantage of this system is a resultant failure of precision of description possible at the fine-structural level. He groups examples of this into two types: "cases of overspecificity, where the closest available schemas specify more than what the image in the speaker's mind calls for, and cases of underspecificity, where the nearest schemas specify less than the speaker would like to indicate about his image" (p. 269) Examples of both cases appear among the prepositions discussed above. Consider the case of a person standing right up next to a wall. This person would most likely be described in Polish as standing przy ścianie. While contact between the person and the wall may not be at stake in the situation described (as one would normally expect with the use of przy), przy offers the overall best description of the situation, given the choice of spatial prepositions available in Polish. It is overspecific, but presents the closest available schema. Przy, in fact, is often used with the element of "contact" in its meaning metaphorically "extended" to apply to situations where two things are perceived as "belonging together," whether "contact" is perceived between them or not. Thus we find the "extended" use of przy which coincides with the sense of R pri, indicating a relation of possession:

P Przy instytucie jest dom studencki.: R Pri institute - obščežitie.:
The institute has a dormitory.

The following situation provides an example of the possible underspecificity of the closest available schemas. Consider a case where one thing is supported by another, but through indirect contact (say, a standing lamp on a carpet on the floor). One cannot specify the relation of indirect support with a preposition in English, Polish, or Russian, and would normally say the lamp was on (P na/ R na) the floor, which indi-

cates support by the floor, but does not specify if it is direct or not.

Of course we don't normally feel that our ability to communicate what we want is hampered by these phenomena of over- and underspecificity. We have means of getting "in between" disjunctive alternate schemas in order to refer to the myriad of possible spatial conceptualizations we may have. Below we will see how four of the means that Talmy (1983, 272-276) discusses relate to the data from the present study.

1) Cancelling Features of Overspecific Schemas

"An overspecific schema includes one or more features that are inappropriate to a speaker's understanding of a particular spatial configuration" (ibid., p. 272). However if a certain prepositional schema is the closest one available for what the speaker wants to convey, the speaker may employ it and enrich the descriptive context so that the hearer will be induced to cancel or suspend the schema's non-fitting features. So on hearing "The paper is on (P or R: na) my desk, sticking out of my notebook," a listener can gather that the paper may not be in contact with the desk, and is only indirectly supported by it. As a result of the relation to the qualifying Localizer (the notebook), the condition of support is suspended. This phenomenon certainly lends even more support to the hypothesis followed in this study, that rather than relying on a group of necessary and sufficient conditions, a word meaning may be based on a cluster of preference conditions.

2) The Use of Open-Class Elements

Open-class elements can describe a huge number of spatial configurations beyond those specified at the fine-structural level. Significantly, these are usually descriptions that are not needed as often in our daily interactions. Talmy (1983, 273) cites the following examples for English, which I will compare with Slavic:

nouns such as	zig-zag	P zygzak	R zigzag
	spiral	spirala	spiral

adjectives such as	concentric oblique	koncentryczny pochyły	koncentričeskij naklonnyi
verbs and verb phrases such as	ricochet speckle	odbijać się znaczyć plamkami	otražat'sja, delat' rikošet ispeščrjat'.

3) Image-Constructing Processes in the Hearer

Though these processes are only beginning to be understood, Talmy (1983, 274) offers the following description of them.

> [T]he hearer somehow combines the reference ranges of a sequence of grammatical and lexical elements with each other and with his understanding of the world and of the current speech situation in a way that there emerges a fairly detailed image, one taken to be close to what the speaker wanted to convey The image may go through revisions as more is heard or more is called up from general knowledge.

This may be thought of as a "fleshing-out" process on the part of the hearer while trying to understand the speaker's message, and thus image-constructing is not meant to connote here a purely visual process. This process is integrally related to the first one mentioned; revisions of the hearer's image may entail cancellation of certain features that might otherwise apply.

4) Elaboration of Descriptions by the Speaker

An interesting example of descriptive elaboration is what Talmy calls "nesting," in which the output of one descriptive construction is cycled back as the input to another. He gives the example (p. 275) There are clusters of dots all over the board. Here the phrase "clusters of dots" gives an initial description (stating basically that "the dots are in clusters"). The elements of this pattern, the clusters, are then further characterized by the second construction: "all over the board."

Nesting provides a good way of characterizing what may be called double locative constructions (e.g. He's in his office at his desk.). These double locatives are espe-

cially common with the u • G constructions in Russian (less often in Polish):

R Tvoja kniga u menia v komnate.: P Twoja książka jest w moim pokoiu.:
Your book is in my room.

Since in reference to humans P/R u • G simply refers to the "place of the Localizer-person", nesting provides a way of adding further specification as to what that "place" is. As mentioned in 3.1.2, the place may vary greatly, from a large region:

R U nas v strane...: P W naszym kraju (u nas w kraju)...: In our country...

to one's person:

R U menia bolit golova.: P Głowa mnie boli.: My head hurts.

• • •

The data here certainly lend support to Talmy's claims about how language uses disjunctive spatial schemas at the fine-structural level of description which are then filled in by processes such as the four mentioned above. But it is worth noting that the four means of "filling in the cracks" between schemas in a given language play another important role: they can be used to fill in the cracks between the schemas of "translation equivalent" prepositions of two languages when they don't coincide.

As discussed in summary sections 3.3.3 and 4.2.6, there are a number of cases where prepositions that function as translation equivalents across different languages actually represent different spatial schemas or relations, and so don't really "mean" the same thing. Nonetheless we use them to describe the same situations because at the fine-structural level they offer the schemas closest to those being described in the other language. With the four processes discussed above, it is possible to compensate (at least partially) for the differences in schemas available in each language. For example, while English lacks a single preposition to express the path type embodied in P/R do • G (discussed in section 4.2.4), one may use the closest available preposition, to, and if desired qualify it as up to, or cover it with an open-class element, such as the verb to reach (something).

5.2 The potential for extending the analysis

5.2.1 *Expressions of extent and orientation*

A question that is often left open-ended in semantic analyses of spatial prepositions is what to do with usage such as the following:

(5.1) The garden extends as far as the river. P Ogród ciagnie sie aż do rzeki.
R Sad dokhodit do samoi reki.

The flagpole reaches (up) toward the sky. P Flagsztok ciagnie sie do nieba.
R Flagštok tianetsja k nebe.

This road goes to Moscow. P Ta droga prowadzi do Moskwy. R Èta doroga vedët v Moskvu.

(5.2) The needle is pointing to the south. P Igła pokazywa na południe.
R Strelka ukazyvaet na jug.

My windows look out onto the ocean. P Moje okna wychodza nad morze.
R Moi okna vykhodiat na more.

His back was turned towards me. P Stał do mnie plecami. R On stojal ko mne spinoi.

The PPs indicate that a Path argument is involved -- note the use of to, toward, onto: P do + G, na + Acc; R do + G, k + D, v/na + Acc. But unlike the paths in Chapter 4, these paths do not describe the motion of the SpE.

It is worth noting that the framework of Conceptual Semantics as outlined in Jackendoff (1983) also offers a treatment of these cases. In addition to the Path role of traversal discussed in Chapter 4 above, Jackendoff (1983, Chapter 9) describes two additional roles: extent and orientation[1]. The examples in (5.1) above exemplify extent, and those in (5.2) -- orientation. Rather than expressing Events[2] as the GO verbs of traversal do, the verbs in sentences of extent and orientation express States. As such, they are usually in the simple present tense, and in the past tense they cannot be preceded by "What happened was..." (a criterion for separating Events from States, as in

---

[1]Bennett (1975) discusses extent as a "deep" case, but does not handle the expressions of orientation discussed here.

[2]What are referred to here as Events include situations which may be called Processes according to Kučera's (1983) semantic model.

*What happened was that the carpet extended into the hall"). Jackendoff notes (p. 173) that it is significant that most verbs of extent can also be used as verbs of motion. "With such verbs, the possibility of a motion or extent interpretation is determined by the motility of the subject (people travel, roads don't) and sometimes by the tense (simple present for extent, a state, and progressive for traversal, an event" (ibid.). He calls the function expressed by extent sentences GO_{Ext}, and describes such sentences with the conceptual structure:

$$[_{State}\ GO_{Ext}\ ([_{Thing}\ x], [_{Path}\ y])].$$

Orientation sentences, rather than describing the location of the subject or its motional source or goal, describe the direction it is pointing (cf. (5.2)). Jackendoff (ibid.) groups these verbs (such as to point, aim, face) under the function ORIENT, a function which fits the following structure:

$$[_{State}\ ORIENT\ ([_{Thing}\ x], [_{Path}\ y])].$$

Thus the framework handles the various Path expressions in a consistent manner, reflecting their different roles -- as entities which something traverses, over which something extends, or along which something is oriented -- as a consequence of the Event or State functions of which they are a part.

5.2.2 *The significance for non-spatial semantic fields*

The notion that the semantics of location and motion provide the key to a wide range of other semantic fields is one that has been discussed in numerous works. (See references in Anderson (1971, 6), and in particular Clark (1973) and Bennett (1975) on the subject of time as a spatial metaphor.) I will limit my comments here to a few studies which offer some of the most insightful findings on the subject.

Talmy (1983), as discussed above in 5.1, focusses on the disparity between a language's "relatively small set of fine-structural elements representing an equally small set of disjunct schemas, and the indefinitely large perceptual and conceptual continu-

um potentially to be referred to" (p. 276). He contrasts this observation with the traditional view of closed-class systems in a language. By this view, such a class (such as the set of space-characterizing prepositions of a language)

> constitutes for some semantic domain a classificatory system whose categories to a large extent are contiguous (start up nearby the boundaries at which others leave off), are exhaustive (leave few gaps), are mutually exclusive (exhibit little overlap) and, generally perhaps, are of roughly equal size. (ibid., p. 276)

This view suggests the model of a two-dimensional array of adjacent "pigeonholes," where any particular item fits into one pigeonhole or another. As observed in the present study, this is clearly not the case. In a domain such as spatial relations where any two given situations may differ by so many factors (e.g., the types of L-rs, possible spatial relations, parts of L-r involved in a relation), it would take at least thousands of distinct prepositions to cover the semantic field such that each preposition would differ in a minimal way from its "contiguous" neighbor.

> Such an arrangement is not in principle impossible for a symbol system, but natural languages appear to be under a constraint that limits the number of distinct symbolic elements it can utilize, and in fact never exhibit systems of same-category elements in such numbers. Rather than a contiguous array of specific references, languages instead exhibit a smaller number of such references in a scattered distribution over a semantic domain. (ibid., p 278)

This is especially apparent in the present study in terms of the different use types which reflect a scattered rather than contiguous array of characterizations of L-rs. For example, while the languages express differences between relations to the interior of "containers" versus "filled solids" (expecially in the Adlative -- see section 4.2.3.2), they don't seem to show much difference between relations to the interior of solids versus liquids or gases. Rather, the latter two are normally treated the same as "filled solids". As Talmy concludes (p. 279), the closed-class elements are *representative* in referring to semantic domains, not exhaustive.

How does any given language come to have the specific array of representative terms that it does? Talmy (p. 281) offers the following answer:

> While there are undoubtedly factors that encourage the positioning of these at certain locations within semantic space -- such as a high frequency of occurrence or cultural significance attaching to some specific notions -- their locations must nevertheless be to a great extent arbitrary, constrained primarily by the requirement of being "representative" of the lay of the semantic landscape, as evidenced by the enormous extent of non-correspondence between specific morphemes of different languages.

Finally, Talmy suggests further in his article that this way of representing space is certainly characteristic of other domains, and in fact that the way language represents meaning can be viewed as generalized from the way it structures space. It is this basic idea which is also pursued in a somewhat different vein by Jackendoff in Chapter 10 of *Semantics and Cognition*. Here he follows up on a hypothesis presented by Gruber (1965) which he calls the Thematic Relations Hypothesis, and states it (Jackendoff, 1983, 188) in the following terms:

> *Thematic Relations Hypothesis*
> In any semantic field of [EVENTS] and [STATES], the principal event-, state-, path-, and place-functions are a subset of those used for the analysis of spatial location and motion. Fields differ in only three possible ways:
> a. what sorts of entities may appear as theme [i.e. SpE];
> b. what sorts of entities may appear as reference objects [Localizers];
> c. what kind of relation assumes the role played by location in the field of spatial expressions.

Thus this hypothesis proposes that the organization of spatial concepts provides a ready framework for the understanding of how other concepts are organized. It helps explain the presence of similar lexical and grammatical patterns that appear across apparently unrelated semantic fields, a phenomenon Jackendoff (1978) refers to as cross-field generalization. The hypothesis also implies the psychological claim that the mind does not manufacture concepts out of thin air, but adapts mechanisms that it already

has available.

Taking the example of the relation between the temporal and spatial semantic fields, Jackendoff (1983, 189) defines the temporal field according to the criteria of the Thematic Relations Hypothesis as follows:

> Temporal field:
> a. [EVENTS] and [STATES] appear as theme.
> b. [TIMES] appear as reference object.
> c. Time of occurrence plays the role of location.

He notes that the hypothesis not only explains the similarity between PPs of space and time, but also predicts that verbs asserting temporal location will appear in patterns parallel to those of spatial verbs, e.g. (ibid., p. 190),

(5.3) a.) The statue is in the park. [a BE verb]

b.) We moved the statue to the park. [a GO verb]

(5.4) a.) The meeting is at 5:00 [BE]

b.) We moved the meeting to Thursday [GO]

This also applies to expressions of extent (ibid.):

(5.3) c.) The road went/extended from Denver to Indianapolis.

(5.4) c.) Ron's speech went/extended/lasted from 2:00 to 4:00.

This relation between spatial and temporal verbs and PPs can also be found in Slavic. The following examples show the parallel between the spatial.

(5.3) a.) P Statua jest w parku.: R Statuja -- v parke.

b.) P Przenieśliśmy statue do parku.:
R My perenesli statuju v park.

c.) P Droga ciagnęła sie od Denveru do Indianapolisu.:
R Doroga śla/prokhodila ot Denvera do Indianapolisa.

and temporal semantic fields.

(5.4) a.) R Miting budet v 6:00 časov

In Polish, however, we have: P Zebranie bedzie o szóstej. W does appear, though, in other Polish temporal expressions such as

P w niedziele, w poniedziałek, etc.: on Sunday, on Monday, etc.

P w zimie, w lecie, w jesieni: in the winter, in the summer, in the fall

P w tym roku: this year

(5.4) b.) P Przesunęliśmy zebranie na czwartek.
R My perenesli miting na četverg.

c.) P Jego przedmówienie trwało/ciągnęło się od drugiej do czwartej.
R Ego reč dlilas'/prodolžalas'/tianulas' s 2 do 4.

Jackendoff (1983) then proceeds to the possessional semantic field, discussing alienable possession in particular, which he views in light of the Thematic Relations Hypothesis as follows (p. 192).

> Alienable possession.
> a [THINGS] appear as theme
> b. [THINGS] appear as reference object.
> c Being alienably possessed plays the role of location:
> that is, "y has/possesses x" is the conceptual parallel to
> spatial "x is at y"

Part c might seem strange to an English speaker in that it would give to the example below the conceptual structure which follows it (Jackendoff uses the subscript "Poss" to designate functions relativized to alienable possession.)

(5.5) Cathy has/possesses/owns a doll.
The doll belongs to Cathy.
$[_{State}\ BE_{Poss}\ ([DOLL], [_{Place}\ AT_{Poss}\ ([CATHY])])]$.

However Jackendoff notes (p. 193) the similarity of this structure to that seen in other languages (he cites French and Hebrew) which use the verb "be" for possession and a prepositional phrase of location to indicate the possessor. This is also clearly the situation in Russian where possession is indicated by u + G.

(5.5) R U Kati (est') lalka.

Jackendoff goes on in Chapter 10 of the book to discuss the relation between the spatial and other semantic fields, such as the identificational (which concerns the categorization and ascription of properties), circumstantial (which includes verbs of causation), and the existential (where the reference object is the state of "existence"),

which I will not elaborate on here. The key point is that the pattern keeps repeating itself. The notion of what it is to be "in a place" changes from one field to the next, such that in the spatial field, a location is a position; in the possessional field it is to be owned by someone; in the identificational field it is to have a property; and so on (Jackendoff: 1978, 221). The Thematic Relations Hypothesis reveals the same analogy over and over again. Jackendoff closes Chapter 10 with a proposal that has far reaching implications, that perhaps thematic structure is not simply a "spatial metaphor" being applied elsewhere, but may really be

> an abstract organization that can be applied with suitable specialization to any field. If there is any primacy to the spatial field, it is because this field is so strongly supported by nonlinguistic cognition: it is the common ground for the essential faculties of vision, touch, and action. (p. 210)

This conclusion indicates that the significance of analyses such as the present one is not limited to a small group of words studied in a few languages. Rather, a better understanding of the spatial semantic field can significantly open the way to our understanding of a number of other semantic fields.

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