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The Mapping of Elements of Cognitive Space onto Grammatical Relations: An Example from Russian Verbal Prefixation

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0.0 Introduction

This paper demonstrates the use of a cognitive model to describe the semantics of Russian verbal prefixes, as applied to the prefix *pere-*. The cognitive model provides a valid description not only of the semantic contributions of the prefix, but of the syntactic relationships between the resulting verb and its arguments as well. Thus, as will be shown below, a single set of basic concepts can be used in descriptions on both the semantic and syntactic levels.

0.1 The Role of the Prefix and How It Is Captioned

The role of the Russian verbal prefix is comparable to that of a director; it establishes a setting, gives a general plot to the action and casts arguments of the verb in specific roles. The prefix is an organizer which processes the "raw materials" of the semantics of the verb and its relationship to its arguments. This semantic contribution of the prefix to a sentence is captioned in terms of *configurations*, which are roughly equivalent to the profiles used by Langacker (1983; see also Lindner 1981 and Brugman 1981 in which English *up* and *out*, and *over*, respectively, are described in terms of cognitive models and Rudzka-Ostyn 1983 which uses cognitive models to compare the semantics of Dutch *uit* and Polish *wy*). One of the configurations associated with a prefix usually serves as an Idealized Cognitive Model (ICM, see Lakoff 1982b) or prototype of the prefix and therefore as the central member of the network of related configurations which describe

the prefix as a whole.

The use of a network of configurations captures both the diversity of instantiations of a prefix and their semantic unity. Previous descriptions of Russian verbal prefixes (specific examples of which are given below) have been based on a set-theory model of organization in which diversity and unity are diametrically opposed. Traditionally, lists of seemingly unrelated meanings have been ascribed to prefixes (promoting diversity at the expense of unity; see *Slovar'* 1950-65 and Boguslawski 1963), whereas in the structuralist school each prefix was given a single vague designation (stressing unity at the expense of diversity; see van Schooneveld 1978, Gallant 1979 and Flier 1975). The cognitive model does not restrict the salience of either of these aspects of prefixal semantics.

In the present cognitive model configurations are drawn in what might be termed "cognitive space". This is not necessarily three-dimensional space as it is understood by physicists, but rather our mental perception of it, and may have one, two, or three dimensions. Prototypically a configuration consists of a landmark (labeled LM, sometimes called a domain), and a trajector (TR) which moves in relation to it. The trajectory (TRy) is a profile of this movement, usually with respect to time (cf. the use of trajectories in the profiles in Langacker 1983). First the semantic role of these elements will be examined briefly and then their relevance to the syntax of the prefixed verb and its arguments will be discussed.

The landmark and trajector may take a limited range of different shapes and relative sizes and, like the cognitive space in which they are drawn, can refer to many things other than physical objects. The landmark can refer to space, time, an act, or a state, and the trajector likewise may be an actual or abstract object.

Like *pere-*, any other Russian prefix has several configurations, each of which may have several applications, or submeanings. Usually at least one such submeaning will be spatial and the rest will be metaphorical extensions of that submeaning, created by varying the referents of the landmark and the trajector. Of the configurations associated with a given prefix, one typically emerges as the central or prototypical configuration, to which all others are related by means of a series of links. These links represent the minor transformations by which the configurations differ from one another and comprise a small, closed set. All of the links associated with *pere-* can be found in the structure of other prefixes as well (for more on inter-configurational linkage and the limitations on its typology, see Janda 1986), which
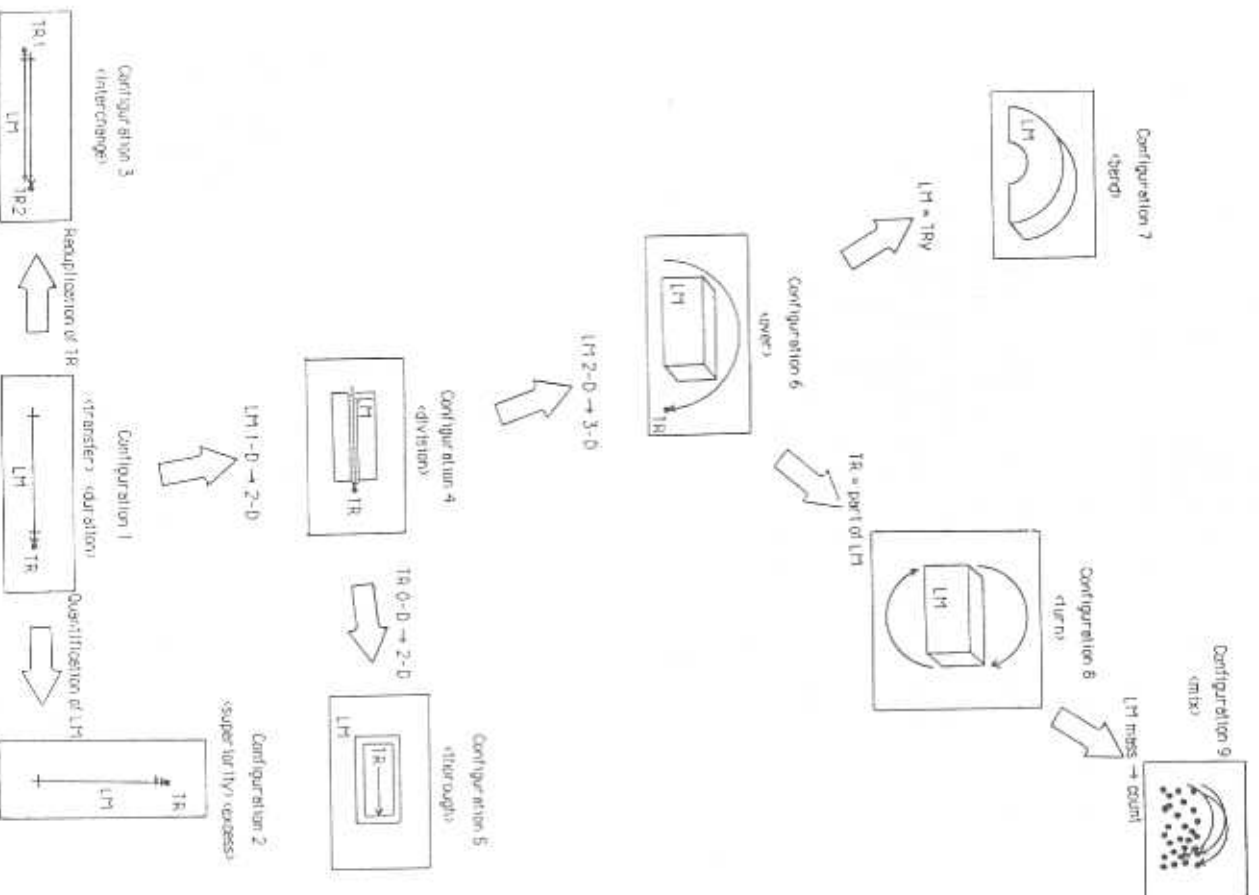
Figure 1

indicates that these links are neither random nor arbitrarily concocted. Links exhibit transformations of quantification (i.e., distinctions in dimensionality, conception of configurational elements as count versus mass objects) and identification (of parts or wholes of elements with each other).

1.0 The *pere*-Network

Figure 1 contains the network of configurations associated with the prefix *pere-*, which is by far the most versatile of the Russian verbal prefixes and which performs about the same function as the English verb particle *over* in approximately two-thirds of its submeanings. The submeanings captioned by each configuration are given in brackets. These bracketed terms are intended only as convenient labels for the submeanings and should not be construed as semantic features. A brief characterization of the linking transformation (described in more detail in the text below) appears between neighboring configurations. Configuration one serves as the ICM of *pere-*'s semantic network, from which all other configurations in this network trace their origin, as indicated by the arrows in Figure 1.

1.1 Configuration 1

Configuration 1

<transfer> <duration>
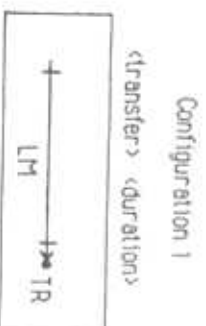
LM ⊢————⊢➤ TR

Figure 2

The prototype of this network is numbered one. In this one-dimensional configuration, which is associated with the submeanings <transfer> and <duration>, the trajector traverses the length of the landmark, a stretch of unidimensional cognitive space which may refer to distance, an object, or time.

1.1.1 <Transfer>

Cognitive space indexes a distance between two points of reference in

either a spatial or a non-spatial domain. The trajector is transported across the intervening distance and arrives at the terminal boundary of the landmark. In concrete instantiations the landmark refers to a physical distance. An example of a metaphorical extension of this submeaning involves the social domain of loyalty, in which individuals can be "transferred" to a new leader or firm without being physically transported. In the examples the letters (A) and (B) refer to relationships between the verbal arguments and configurational elements. These relationships will be discussed in section three.

(1) Ona prikazala peredat'(A)   na druguju ploščadku.
     She ordered pere-fly-infin to other   square
     "She ordered me to fly to another airfield."

Also:

perenesti (A)   čemodan v   druguju   komnatu
pere-carry-infin   suitcase in other   room
"transfer (by carrying) the suitcase to another room"

peredat'(A)   sol'/operu
pere-give-infin   salt/opera
"pass the salt/broadcast an opera"

perejti (B)   ulicu
pere-walk-infin   street
"cross the street"

1.1.2 <Duration>

Here, cognitive space refers to time and therefore the landmark is a period of time during which the trajector pursues a given activity and the trajectory represents its progress through time. The activity usually involves waiting or killing time in some way.

(2) Oni upolzli   v storonu, čtoby perezdat' (B)   obstrel.
     They crawled-off in side   to   pere-wait-infin   firing
     "They crawled off to one side to wait for the firing to finish."

Also:

perezimovat' (A)
pere-winter-infin
"spend the winter"

perekurit' (B)
pere-smoke-infin
"smoke during a break"

perebolet' lixoradku (B)
pere-hurt fever
"get over a fever"

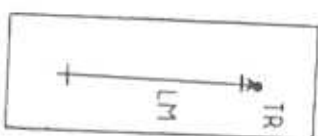## 1.2 Configuration 2

Configuration 2
<superiority> <excess>

Figure 3

In this configuration the landmark is quantified and the movement of the trajector is measured against it. To signal the scalar function of the landmark in this configuration it appears with a vertical orientation. There are three submeanings associated with this configuration: <superiority>, <excess>, and <redo>. Of these submeanings, only <superiority> makes occasional reference to the spatial domain, and in most instances the landmark is a performance.

1.2.1 <Superiority>

In this meaning the landmark is a given performance of an activity which serves as a quantitative scale against which the activity of the trajector is measured. The trajector crosses the endpoint of the landmark and therefore exceeds the performance referenced by the landmark.

(3) Kto kogo perep'et (B)?
Who who pere-drink-3rd sg
"Who will outdrink whom?"

Also:

perekričat' (B)
pere-shout-infin
"outshout"

perexitrit' (B)
pere-cunning-infin
"outsmart"

1.2.2 <Excess>

As in <superiority>, the landmark refers to a prescribed performance, but in this case it is an ideal or canonical performance. By overstepping the endpoint of the landmark the trajector produces a performance which is evaluated as excessive.

(4) Dobrynin tože peresidel (A) v Vašingtone.
Dobrynin also pere-sit-past-masc sg in Washington.
"Dobrynin has also been sitting around too long in Washington."

Also:

peresolit' (A)
pere-salt-infin
"oversalt"

perestarat'sja (A)
pere-try-infin-reflex
"try too hard"

1.2.3 <Redo>

The landmark here again refers to an act, which is this time specified as previously completed. The trajector retraces the path of the action, in many instances making repairs or corrections along the way.

(5) My ne rasslyšali ego imja,
We not hear-distinctly his name
"We did not catch his name..."

... no *peresprašivat'* (B) *bylo neudobno.*
but *pere-ask-imperf-infin* was awkward
"... but it would have been awkward to ask again."

Also:

peredumat' (B)
pere-think-infin
"rethink"

perestroit' (B)
pere-build-infin
"restructure"

1.3 Configuration 3, <Interchange>

Configuration 3
<interchange>

Figure 4

Configurations one and two are the semantic center of gravity for the entire network and are therefore laden with a number of submeanings. The remaining configurations are less central and have only one submeaning each. Configuration three, which captions the submeaning <interchange> can be produced by reduplicating the trajectory in configuration one. Thus the verbal action is volleyed back and forth across the landmark.

(6) V vetrennom *šume perelaivalis'* *sobaki.*
In windy noise *pere-bark-past-pl-reflex* dogs
"In the roar of the wind the dogs barked at each other."

Also:

perepisat'sja (A)
pere-write-infin-reflex
"correspond"

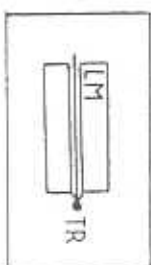## 1.4 Configuration 4, <Division>

Configuration 4
<division>

Figure 5

Here the landmark of configuration one is extended to two dimensions, and it is therefore bisected by the one-dimensional trajector. This action divides the landmark into two pieces. The landmark may be either a physical object or may refer to an "object" in another, non-spatial domain, as in *perebit'* "interrupt (a conversation)."

(7) *Peresekaem* (B) *liniju fronta.*
pere-cut-1st pl line front
"We cut across the front line."

Also:

peregryzt' (B)
pere-gnaw-infin
"gnaw in two"

pererubit' (B)
pere-chop-infin
"chop in two"

1.5 Configuration 5, <Thorough>

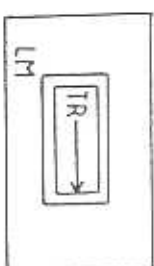
Configuration 5
<thorough>

Figure 6

This configuration is derived from configuration four by extending the dimensionality of the trajector. The trajector becomes a two-dimensional object which spreads over the landmark, covering it. The landmark refers to some object, all of which is subjected to the action of the trajector.

(8) Katja vdrug upala i peremazalas' (A).
Katja suddenly fell and pere-smear-past-fem/sg-reflex
"Katja suddenly fell and got herself completely dirty."

Also:

perezjabnut' (A)
pere-chill-infin
"get chilled through"
peretrusit' (A)
pere-coward-infin
"become altogether cowardly"

1.6 Configuration 6, <Over>
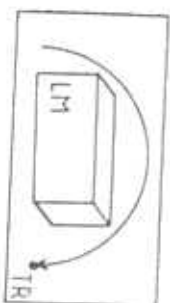

Configuration 6
<over>

Figure 7

A further extension in the dimensionality of the landmark in configuration four produces the solid, three-dimensional landmark of configuration six. The trajector is no longer locked in a plane of two dimensions and can now reach the other side of the landmark by hopping over it rather than cutting through it. In a degenerate version the landmark may be no more than a line, as in perestupit' granicu "cross the border," which, however, still retains the vertical dimension in the trajectory.

(9) Samolet ne udaetsja pereskočit' (B) gornuju grjadu.
Airplane not manage pere-jump-infin mountain ridge
"The plane will not be able to leap over the mountain ridge."

Also:

perestupit' (B)
pere-step-infin
"step over"
perelezt' (B)
pere-climb-infin
"climb over"

1.7 Configuration 7, <Bend>
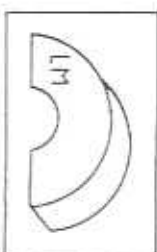

Configuration 7
<bend>

Figure 8

Configuration seven is arrived at by integrating features of both landmark and trajector in a single entity. The product of this identification of the landmark with the trajector produces a three-dimensional solid which approximates the curve of the trajectory in configuration six, i.e. a bent object. This configuration and the two which follow it are rather limited in terms of the number of verbs which are associated with each of them, and indeed they are peripheral in pere's cognitive network.

(10) Koška peregibaet (A) spinu i žmuritsja.
cat pere-bend-3rd sg back and squints
"The cat hunches up its back and squints."

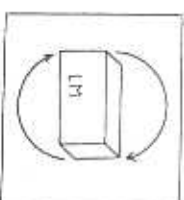**1.8 Configuration 8, <Turn>**

Configuration 8
<turn>

Figure 9

Configuration six serves as the source for this configuration as well. One end of the landmark traces the path of the trajector, causing the landmark to flip over. Although the landmark is usually a physical object, it may reference "objects" in non-spatial domains, as in *u nego žizn' perevernulas'* "his life has been turned upside-down."

(11) *U-2   zacepilsja   kolesami   za   provoda*
U-2   caught   wheels   behind   wires
"The wheels of the U-2 got caught on the wires...""

...i   perevernulsja (A).
and   *pere*-turn-past-masc.sg-reflex
"...and flipped over.""

1.9 Configuration 9, <Mix>

Configuration 9
<mix>

Figure 10

<Mix> can be conceived of as a degenerate version of the preceding configuration. In the transformation between configurations six and seven the solid landmark is decomposed into a group of objects. Thus when the edge of the landmark traces the trajectory the result is a shuffling of the landmark's composite parts.

(12) *Koren'ja   i   luk   peremešivajut (A)   i   podžarivajut.*
spices   and   onion   *pere*-mix-3rd pl   and   sauté
"Spices and onion are mixed together and sautéed.""

2.0 The Cognitive Model in Semantic Description: A Summary

The preceding section has presented an example of the application of a cognitive model to semantic description. Despite the semantic diversity of the prefix *pere-*, all of its meanings were integrated into a single coherent network, which illustrates the relationships that hold the category together. A traditional treatment (using set theory and/or semantic features) of such

a rich semantic category would be unable to capture its underlying unity since the main focus of such a description is the identification of divisions rather than relationships. A structuralist description would conversely attempt to assign a single vague characterization to the entire category, suppressing the very real distinctions which exist within the category. Without the cognitive model, semantic diversity cannot be reconciled with underlying unity and the result is inevitably a list of unrelated meanings, giving the impression that *pere-* (or any other semantically complex lexical item) is merely a haphazard group of homonyms.

The position of a configuration in the network is also relevant. Configurations which are central to the network index submeanings which are semantically central to the prefix and which are more frequently used than those which appear on the periphery of the network and which are indeed semantically peripheral, such as *pere*-<bend>, <turn>, and <mix>. The network thus offers a scale of centrality and typicality of submeanings.

In addition to providing an elegant description of the semantics of the prefix *pere-*, the cognitive model is endowed with a certain amount of predictive power. Each submeaning is associated with certain semantic groups of verbs. Thus, given a prefix and a verb, one can predict what submeaning will occur. For example, verbs denoting longitudinal transportation are associated with *pere*-<transfer>, verbs denoting transportation having a vertical component are associated with <over>, verbs used in cooking are associated with <excess>, and verbs of cutting and breaking are associated with <division>. In theory (once all of the prefixes have been subjected to this description) one could likewise select the proper prefix to produce the desired submeaning with a given verb. Such prediction can also be made available with a traditional semantic description, although to a more limited extent, since the relationships between the submeanings and between the verb and prefix are not as clear as they are in the cognitive model.

3.0 Mapping the Cognitive Configuration onto the Verbal Arguments

An important by-product of the use of the cognitive model in the semantic description of prefixes is that it also reveals a system of relationships between the prefixed verb and its arguments. The verbal arguments are assigned the roles of trajector and landmark' according to two specific patterns, outlined below. (Throughout the text above the letters (A) and (B) have been used to identify which pattern is represented by each of the

examples.)

Pattern A:

TR = intrans subj or DO
LM = distance to terminus specified in PP or indirectly

Pattern B:

TR = trans subj
LM = DO

To elaborate, according to pattern A, which is the dominant pattern, the role of trajector will be played by the subject of the sentence when the verb is intransitive, or by the direct object when the verb is transitive. The opposite endpoint of the landmark in this case will be identified in a prepositional phrase or specified by the context. In some cases the identification of the landmark is included in the verb itself, as in a number of the <duration> verbs, e.g., *perezimovat'* (*pere-*winter — "spend the winter"), *perenočevat'* (*pere-*night — "spend the night"). Pattern B assigns the role of trajector to the subject of a transitive verb, and that of landmark to its direct object.

To illustrate how the configurational elements are mapped onto verbal arguments, I will review some of the examples given in the text above (which here appear in abbreviated form).

(1a) *Ja pereletu (A) na druguju ploščadku.*
    "I will fly to another airfield."

The subject of the intransitive verb acts as the trajector and the terminus of the landmark is specified in the prepositional phrase.

(12a) *My peremešivaem (A) koren ja.*
    "We mix spices."

This example also illustrates pattern A, but in this case the verb is transitive and it is therefore the direct object which fills the role of trajector. The trajector in this configuration is defined as part of the landmark. The landmark is indirectly identified as the remaining spices.

(7a) *My peresekaem (B) liniju fronta.*
    "We cut across the front line."

Again the verb is transitive, but this is an instance of pattern B, in which the subject, we, is the trajector and the direct object, the front line, is the landmark.

In a survey of all the submeanings of four prefixes (see Janda 1986) it was found that all examples of verbs conform to one of these patterns, of which pattern A is the most common, and that the patterns appear in complementary distribution. Most submeanings are specific to a single pattern, and in those instances where both patterns appear in a submeaning, transitive verbs were found to use pattern B and intransitive verbs were found to use pattern A. Of *pere-*'s submeanings, five conform to pattern A (<excess>, <bend>, <interchange>, <turn> and <mix>), four conform to pattern B (<superiority>, <redo>, <division>, <over>) and three of the submeanings use both patterns, the distribution of which is determined by whether the verb is transitive or intransitive (<transfer>, <duration> and <thorough>).

Intransitive verbs are restricted to pattern A, in which their subjects act as trajectors. This is reasonable, since in a statement made with an intransitive verb only the subject is capable of any movement, be it literal or metaphorical. Transitive verbs, however, conform to either pattern A or B, and the role of trajector is played by the direct object or the subject, respectively. The trajector is the active, moving part of the configuration and likewise indexes the most active and salient argument of the verb (there are examples of transitive verbs with which both the subject and the object follow the motion described by the trajector, cf. *perenesti čemodan* cited in 1.1.1 above; in such cases the object is the trajector, since it is the patient). Thus the selection of pattern A suggests that the subject is inactive and that the direct object is active, whereas the converse is true for pattern B. This distinction between active and inactive subjects implies that there are subtle distinctions to be made in the seemingly unified categories of subject and direct object. Furthermore, since entire submeanings select a single pattern for their transitive verbs, it seems that the distinction between pattern A and pattern B for transitive verbs is made on semantic grounds. Thus, distinctions made between salient, active subjects and inactive ones arise from differences in the semantic freight of verbs. This confirms Langacker's (1983) observation that there are varying degrees of subjectivity, and that distinctions are made between what he has termed the "optimal viewing arrangement," which parallels pattern A, in which the object is more involved in the action, and the "egocentric viewing arrangement," parallel to pattern B, in which the subject is more prominent.

Since in pattern A direct objects are equated with subjects of intransitive verbs (i.e., both are identified as the trajector in the configuration),

transitive pattern A verbs will henceforth be identified as "para-absolutive," as opposed to pattern B verbs which will be labeled "non-absolutive." This terminology has been adopted because pattern A assigns equivalent case roles to subjects of intransitive verbs and direct objects, reminiscent of the case distinction made in ergative-absolutive languages (although Russian is a nominative-accusative language, this does not preclude the existence of ergative-absolutive distinctions in the language, cf. Comrie (1981a: 104-108) who cites languages which use both distinctions and states that "it is misleading to classify a language as being either ergative or not"). Significantly, verbs which conform to pattern B have often undergone transitivization as a by-product of prefixation, probably due to the close relationship between the subject of the newly-transitivized verb and the verbal action. Below is a list of para-absolutive and non-absolutive verbs prefixed by pere-, in which transitivized verbs are marked with an asterisk.

Para-absolutives:	Non-absolutives:
peredavat'	**pere-drink-infin*
pere-give-infin	pere-drink-infin
"convey"	"outdrink"
peregruzit'	*peresit'*
pere-load-infin	pere-sew-infin
"overburden"	"resew"
perekinut'	**pereskočit'*
pere-throw-infin	pere-jump-infin
"toss over"	"jump over"

Although *pit'* "drink" can, of course, be used transitively, it is the intransitive use which is selected by the prefix and transitivized, i.e. while it is possible to say *On perepil gostej* "He outdrank the guests", it is certainly *not* possible to say **On pil gostej* "He drank the guests". The transitivization of verbs through prefixation in Russian has a parallel in the use of verb particles in English: the simplex verb *laugh*, for example, is intransitive, but can be transitivized by the addition of the particle *out*, as in *When John presented his new theory, his colleagues laughed him out of the room.*

As mentioned above, the terms "non-absolutive" and "para-absolutive" were chosen because Russian makes distinctions similar to those made in ergative languages. In ergative languages the focus is on identifying the patient of the verb, which results in a distinction between patient (and therefore salient) and non-patient subjects. Russian verbal prefixes also

select patients (as trajectors) and distinguish them from non-patients. Thus although no ergative distinction is morphologically encoded in Russian, it is nevertheless present and in turn reveals that the grammatical relations of subject and object may be complex rather than primitive concepts, and that ergative-absolutive distinctions may be more universal than case typology indicates. The fact that such conclusions can be drawn from a study of pre-fixal meaning points to a dynamic interaction between semantics and syntax, two levels of linguistic study which were integrated in the present cognitive model.

Notes

1. The referent of the trajector may be three-dimensional, but since its thickness is irrelevant, it is construed as two-dimensional.

2. The terms "trajector" and "landmark" signify the concepts used by Talmy, rather than the more abstract trajectors and landmarks characteristic of Langacker's work.