

# LOCATIVE ALTERNATION IN SLAVIC: THE ROLE OF PREFIXES

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This paper deals with the phenomenon called locative alternation, the classification of locative verbs, the comparative analysis of locative verbs in two languages, English (E) and Russian (R), and syntactic-semantic correspondences.

Two principal goals were set up. The first goal is to investigate the relation between the semantic structure of locative verbs and their syntactic configuration in R adopting the Broad Range class model of Pinker (1989)<sup>1</sup> and to compare R locative verbs with their E counterparts. The more important goal is to offer some explanation for the fact that most non-alternating morphologically simple R content verbs can enter the Ground frame when prefixed with ZA- and OB-. We are going to account for the role of prefixes (ZA- and OB-, namely) in the locative alternation in R.

The organization of this paper is as follows. In **Section 1**, we introduce locative verbs, talk about their classification, review the main approaches to the syntactic-semantic structure of locative verbs, and discuss what properties of verbs determine whether they can occur in the Figure frame, the Ground frame, or both as well as what properties permit the alternation.

In **Section 2**, we first present an analysis of R locative verbs. We then discuss the status of Slavic prefixes and their role in the locative alternation, concentrating on the semantic contribution of two prefixes that usually trigger the alternation, ZA- and OB-. We finally develop two approaches that explain why only particular prefixes play a role in the locative alternation and what their exact functions are.

## 1. Locative Verbs in English

We start with some basic introduction of the notion of locative verbs. Locative verbs are verbs that involve transfer of an object, substance, or set of objects into/onto or from a container or surface. The entity being transferred is referred to as the Theme, Figure, or Locatum; the entity into/onto or from which the object or substance is moved is labeled the Goal, Ground, or Location.

Based on what is believed to be the core meaning component of locative verbs, Pinker (following Levin and Rappaport 1988) proposes the broad-range class model according to which all locative verbs are subdivided into two main

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<sup>1</sup> There are several good reasons to take Pinker (1989) as a useful point of departure without necessarily adopting his analysis as such. He provides an explicit representation of the semantics of locative verbs when they occur in one or the other frame borrowing basically an account of Levin and Rappaport from the late 1980s. As far as Pinker's analysis is concerned, there are several problems that have been explicitly criticized in the literature; we are not going to discuss them here.

classes, namely, container-oriented verbs and content-oriented verbs. A locative verb belongs to the content-oriented class if it maps its Theme onto the direct object position and its locative argument is realized as the complement of a locative preposition like *into/onto* or *from*, as illustrated in (1).

- (1) She dribbled paint onto the floor. /  
\*She dribbled the floor with paint.

Verbs of the container-oriented class have a different argument structure: the Theme is realized as a prepositional phrase headed by the preposition *with* and the location argument is licensed in the direct object position, as in (2).

- (2) She soaked the sponge with water. /  
\*She soaked water into the sponge.

In other words, a verb is associated with a figure frame like V [NP<sub>Figure</sub> into/onto NP<sub>Ground</sub>] if its Figure (Theme/Locatum) is realized as the direct object; a verb is connected to a ground frame like V [NP<sub>Ground</sub> with NP<sub>Figure</sub>] if it licenses its Ground (Goal/Location) to occupy the direct object position.

There are alternating and non-alternating locative verbs. Those locative verbs that confine the realization of their arguments only to either Figure or Ground frame are non-alternating verbs. Alternating verbs allow for the alternation in argument realization; in particular, some basic Figure verbs can enter the Ground frame, and some basic Ground verbs can enter the Figure frame.

According to Pinker (1989), the content-oriented (Figure) verbs contain a manner-of-motion meaning component, whereas the container-oriented (Ground) class verbs specify a change-of-state of the location. The semantic structure of the content-oriented locative verbs is illustrated in (3a). The basic meaning component of the locative verbs belonging to the container class is shown in (3b).

- (3) a. X cause Y to go to Z  
b. X cause Z to be in a state by means of [X cause Y to go to Z].

### 1.1 Why and How Locative Alternation is Possible

One of the questions raised by scholars working on locative verbs is what properties of verbs determine whether they can occur in the Figure frame, the Ground frame, or both as well as what properties permit the alternation.

The general hypotheses of the argument projection concern with the issue of whether argument expression is aspectually driven and whether argument expression is lexically or syntactically determined. Within these hypotheses several different approaches to the analysis of locative alternation have been suggested. Among various accounts of locative alternation three main types of theories have been extensively discussed, to which we shall refer as thematic roles account, aspectual account, and syntactic account.

Proponents of the **thematic roles theories**, in particular the single-thematic-structure approach by Levin and Rappaport (1988), assume that verbs' thematic roles are lexically specified at the initial level of representation called Lexical Conceptual Structure (LCS). They are then linked to syntactic slots, like external and internal arguments, at Predicate Argument Structure (PAS) level, and then projected to the level of D-structure according to the projection rules. An alternating locative verb therefore is associated with a unique LCS which yields two argument structures projected to two syntactic frames. According to Levin and Rappaport, from the single entry of *load* type verbs at LCS, two different argument structures arise, as in (4).

- (4) a. LOAD:  $x \langle y, P_{locz} \rangle$   
 b. LOAD:  $x \langle y, P_{withz} \rangle$

However, a problem of how to get from the single LCS entry to the two structures in (4) remains unsolved. To remedy this, Levin and Rappaport assume another solution. They propose that alternating locative verbs include *two* LCS entries which are associated to two argument structures, as in (5):

- (5) a. LOAD<sub>a</sub>:  $\langle \text{Agent, Locatum, Goal} \rangle$  (locative variant)  
 b. LOAD<sub>b</sub>:  $\langle \text{Agent, Theme, Locatum} \rangle$  (with variant)

Both the single-thematic-structure approach and the double-thematic-structure approach seem to have a few shortcomings however. The former fails to provide appropriate linking rules and the latter fails to account for the near-paraphrase interpretation of the two alternates.

Levin and Rappaport deal with the above mentioned problems by suggesting a finer-grained semantic representation of verbs. They decompose verbs meaning and give the rich lexical representations for two LCSs:

- (6) a. LOAD: [x cause [y to come to be at z] / LOAD]  
 b. LOAD: [[x cause [z to be in a STATE]] BY MEANS OF [x cause [y to come to be at z]] / LOAD]

For Pinker (1989), there is a lexical rule allowing for the alternation. Such a lexical rule permits a basic Figure or Ground verb to appear in the Ground frame or Figure frame respectively. In other words, a lexical rule converts a semantic representation of one type into a semantic representation of the other type (the type [X cause Y to go to Z] is converted into a semantic representation of the type [X cause Z to be in a state by means of [X cause Y to go to Z]], or vice versa (Pinker 1989:64, 79))<sup>2</sup>.

Pinker says that if one meaning component is predictable from the other (given knowledge of the world), a lexical rule applies, and a verb alternates; if it cannot be predicted, a verb can enter only one argument structure: [V NP

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<sup>2</sup> The vice-versa means that the second rule consist in erasing a meaning component, something which has been criticized in the literature.

into/onto NP] or [V NP with NP]. *Pour*, for example, specifies only the manner-of-motion of the substance ('substance moves in a stream') and says nothing, or does not allow anyone to say anything, about the change-of-state; moreover, it does not allow one to make a systematic prediction about a change-of-state. Thus, it can only enter the [V NP into/onto NP] argument structure.

Pinker's model has been criticized in the literature for being a so-called "projectionalist approach", i.e. as a representative of an approach which assumes that lexical entries are very specific and are the input to linking rules that will "project" the semantic information on a syntactic level. This approach has also been criticized for adopting a semantic rule to change a lexical entry into another one, thus adopting an approach that multiplies lexical entries, instead of adopting an approach where change in lexical meaning is minimized and semantic differences between two uses (the Figure and the Ground frame) being simply attributed to the frames themselves.

The second approach to the analysis of the locative alternation underlines the role of **aspect** as a mediator between lexical semantics (thematic structure) and syntax (see Tenny 1987, 1992, 1994, Borer 1994 and subsequent works, Rosen 1996, Van Hout 1996, and Levin and Rappaport 2003). According to Tenny, argument projection is lexically determined but aspectually driven. One particular property of direct objects, namely measuring out the event denoted by the verb, is emphasized in the Aspectual Interface Hypothesis (AIH) (Tenny 1987), which accounts for the alternation in a unified way. Under AIH, locative verbs denote events that can be measured out by both the Theme and the Goal arguments. Linking rules, claiming that the argument that measures out the event is projected as the direct object of the verb, thus allow either the Theme or the Goal to be realized in the direct object position.

The two approaches discussed above presume an initial lexical level at which verbs' lexical properties are identified and then some of that lexical information becomes visible for syntax through either an intermediate level of PAS (Levin and Rappaport 1988) or aspectual properties (Tenny 1987).

The third approach, advocated by Borer (1994 and subsequent works), van Hout (1996), Goldberg (1995), points out the role of **syntax** in determining the semantic properties of verbs. It rejects rich lexical specifications and linking rules by suggesting that the arguments of the verb do not bear any specifications in the lexicon, and the verbs are specified only as to the number of their arguments. The arguments acquire their agent or patient related properties once they are placed in the syntactic positions associated with such properties; syntactic positions themselves provide semantic interpretations to the arguments. Locative verbs are listed as taking three unspecified arguments, which are then projected into the available argument positions.

It goes without saying that any approach cannot be borrowed and applied to R locative verbs as such. As we will see in Section 2, the locative alternation in R is dependent on prefixation: a basic Figure verb can enter the Ground frame only when it is prefixed with an appropriate prefix. Such prefixes seem to license the Ground use of locatives thus licensing a locative direct object. Given the

nature of these prefixes they select a ground argument, and their selection must be satisfied no matter what<sup>3</sup>.

Therefore, as far as R is concerned, grammar plays a larger role, i.e. the prefix determines, one way or another, that the direct object will be a Location/Ground, and it seems that in this case, prediction of the sort envisioned by Pinker as necessary for E plays no role as the grammar itself imposes the Location/Ground as the direct object (one must know which types of verbs may be combined with the relevant prefixes however). In particular, the presence of the prefix does not require the type of predictions about the result that Pinker was talking about. Instead, the semantic template imposed by the prefix requires that the argument that occupies the direct object position be a Location/Ground argument.

Let us now turn to the R data and see in detail what locative alternation is dependent on in R and what approaches can be adopted to account for the facts briefly mentioned above.

## 2. Locative Verbs in Russian

In our analysis, we adopt Pinker's Broad Range rule to classify R locative verbs, according to which the two groups are singled out: the content-oriented verbs and the container-oriented verbs. Both morphologically simple and prefixed locative verbs are examined in this section. We shall start with the examination of the container-oriented verbs, equivalent to those classified as pure Ground verbs by Pinker. Though the analysis of R Ground verbs is not the main concern of the present paper, a brief look at their behavior in R may be instructive for the discussion of R Figure verbs, which will follow.

### 2.1 Ground Locative Verbs in Russian

R Ground locative verbs (both morphologically simple and prefixed ones) exhibit the same semantic classes and syntactic pattern as their E counterparts.

- (7) a. On gruzil seno v telegu  
he-NOM load-PAST.IMP hay-ACC in cart-LOC  
'He loaded/was loading the hay onto the cart.'
- b. On gruzil telegu senom  
he-NOM load-PAST.PERF cart-ACC hay-INST  
'He loaded/was loading the cart with hay.'
- (8) a. On POgruzil seno v telegu  
he-NOM PO-load-PAST.PERF hey-ACC in cart-LOC  
'He loaded the hay onto the cart.'
- b. On NA/ZA gruzil telegu senom

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<sup>3</sup> The details of this approach will be discussed later in the paper.

he-NOM load-PAST.PERF cart-ACC hay-INST  
 ‘He loaded the cart with hay.’

Equivalents to alternating G verbs in E can appear unprefixated and prefixed in the Ground frame in R (see (7) and (8)). When a locative verb is prefixed, the prefix is in most cases ZA- (see (8b)). Other prefixes (NA-, PO-, U-, among others) also occur in the Ground frame of Ground verbs. Even if we find a verb which does not at first sight seem to require ZA- in the Ground frame, but any other prefix instead, a more detailed examination of that verb always yields one or two close synonyms with ZA-.

R equivalent to E non-alternating content-oriented locative verbs can enter the G frame only when prefixed with an appropriate prefix.

- (9) a. \*On kryl šyfer na doma  
 he-NOM cover.PAST.IMPF roofing slate-ACC on houses-LOC
- b. On kryl doma šyferom  
 he-NOM cover.PAST.IMP houses-ACC roofing slate-INST  
 ‘He slated/was slating houses.’
- (10) a. \*On POkryl skatert’ na stol  
 he-NOM cover.PAST.PEFT table-cloth-ACC on table-LOC  
 \*‘He covered the tablecloth on the table.’
- b. On POkryl stol skatertju  
 he-NOM cover.PAST.PEFT table-ACC table-cloth-INST  
 ‘He covered the table with a tablecloth.’
- c. On ZAkryl banku kryškoi  
 ‘He covered a jar with a lid.’

Therefore, if a content-oriented locative verb is prefixed when it enters the G frame (optionally for alternating and obligatorily for non-alternating G verbs), it is nearly always prefixed with ZA-. OB-, on the other hand, does not systematically license the Ground frame. This fact raises a question of what determines the choice of ZA- vs. OB- and what the semantic contribution of each prefix is; we will discuss the latter later in the paper but will have to leave the former for future analysis.

## 2.2 Figure Locative Verbs in Russian

As the R data below show, morphologically simple locative verbs do not usually enter the Ground frame (see (11b) and (13b)). When prefixed with an appropriate prefix, most Figure verbs (both alternating and non-alternating in E) can enter the Ground frame and realize their location as the direct object, as in (12b) and (14b). Not all of the prefixes can trigger the alternation though.

Only two prefixes, *OB-* and *ZA-*, *systematically* trigger the alternation. The new prefixed lexeme is different from the unprefixed one in terms of its argument structure. In particular, most nonalternating unprefixed Figure verbs can enter the Ground frame and realize their location as the direct object when prefixed with *OB-* or *ZA-*. Prefixes *NA-* and *PO-*, on the other hand, do not have such an effect on simple Figure verbs<sup>4</sup>.

- (11) a. On bryzgal vodu na cvety  
he-NOM splash-PAST.IMP water-ACC on flower –PL.INST  
'He splashed/was splashing water on the flowers.'
- b. \*On bryzgal cvety vodoi
- (12) a. Mašiny NA/PO/RAZbryzgali grjaz' na stenu  
Cars-NOM splash mud-ACC on wall-INST  
'Cars splashed mud on the wall.'
- b. Mašiny **ZA/O**bryzgali stenu grjazju  
cars-NOM **ZA/O**splash-PAST.PERF wall-ACC mud-INST  
'Cars splashed the wall up with mud.'
- (13) a. On lil moloko v stakan  
He-NOM pour.PAST.IMP milk-ACC into glass-LOC  
'He poured/was pouring some milk into the glass.'
- b. \*On lil stakan molokom
- (14) a. On **NA**lil moloka v stakan  
He-NOM **NA**-pour.PAST.PERF milk-ACC into glass-LOC  
'He poured some milk into the glass.'
- b. On **OB/ZA**lil stol molokom  
He-NOM **OB/ZA**-pour table-ACC milk-INST  
'He poured over the table with milk.'

Another interesting observation about R is that prefixation derives Ground verbs from Figure verbs but not the other way around, i.e. there are no Figure verbs morphologically derived from Ground verbs (this being attributed by Mezhevich 2003, to the fact that semantic templates can only be augmented).

Having seen the R data, we can now conclude that in R alternation is dependent on prefixation. In general, the G as the direct object requires

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<sup>4</sup> It does not mean that there are no alternating FIGURE verbs prefixed with *NA-*; it only means that *NA-* does not trigger a verb entering the GROUND frame in the way *ZA-* does. *NA-* verbs can appear in both frames whereas *ZA-* and *OB-* verbs appear only in the GROUND frame.

On **NA**mazal klej na bumagu (FIGURE frame)

On **NA/ZA/PO/OB**/mazal bumagu klejem (GROUND frame)

prefixation with ZA- or OB-. Therefore, it makes sense to turn to the examination of Slavic prefixes and to find out their specific semantic contribution to the locative verbs.

### 2.3 The Status of Prefixes in Slavic

Slavic prefixes have been given a lot of consideration in the literature. Traditionally, they have been referred to as both inflectional and derivational morphemes and markers of perfectivity. In this paper, we adopt Filip's claim that prefixes are not morphological exponents of the perfective operator (see Filip 2000, 2003, 2004 for a detailed argumentation). Slavic prefixes are not inflectional markers of perfectivity, they are derivational morphemes instead. As such, they can morphologically encode argument-structure changing operations. They can induce: (i) a rearrangement of arguments; (ii) a decrease or an increase in the number of arguments. The last point is the one that we are mostly interested in here. Consider (15):

- (15) Ona Okurila komnatu ladanom  
 she OB-smoked room-ACC incense-INSTR  
 'She filled the room with incense.'

What this example illustrates is that prefixation involves an alternation of the constituent status with respect to the argument/adjunct distinction. *Komnata* 'a room' is promoted into an obligatory argument, direct object, when the verb is prefixed.

Locative alternation under consideration is induced only by specific prefixes. This raises a number of questions: for example, on the more general level, what property of specific prefixes (ZA- and OB- normally) is responsible for the fact that they license the Ground frame? What is it in ZA- and OB- that triggers the alternation?

### 2.4 Semantic Contribution of ZA- and OB-

Let us look into what sort of sense ZA- used as a preposition has. In Slavic (in R, Ukrainian, and Slovenian, at least) preposition ZA has a use meaning of something like 'behind', and one can expect that the use of ZA- in the locative alternation is historically related to this use, where its meaning can roughly be translated as "the Ground is behind the Figure", as "the table is behind the milk" in (14b) above, for example.

We believe that ZA- means something akin to 'G is behind F' or 'F covers G', which we take to be the general meaning of the prefix.

Turning to the preposition OB, we observe that in Modern R, O(B) means 'about', in Slovenian it has a use meaning something like 'at', 'next to', which is the same Indo-European root as 'be-' in Germanic, which is the main prefix triggering the locative alternation in German. With OB- translated (for the sake of illustration and concreteness,) as <at, next to> and ZA- as <behind>, we assume that ZA- and OB- are morphemes that subcategorize for/select a sort of



Location argument, and this is why the Ground is realized as the direct object, and the Ground frame is required.

## 2.5 What Property of ZA- and OB- is Responsible for the Fact that They License the Ground Frame?

We are developing two approaches that explain the fact that ZA- and OB- license the Ground frame. They are as follows: these prefixes simply select a particular type of location argument; they introduce a State (what sort of state?) that must be satisfied by an appropriate direct object.

According to the first approach, the prefix itself requires the location as the direct object; ZA- and OB- subcategorize for/select a sort of Location argument; they introduce some semantic relation, something akin to 'G is behind/covered with F', and something must ensure that G must be satisfied, i.e. must be the direct object..

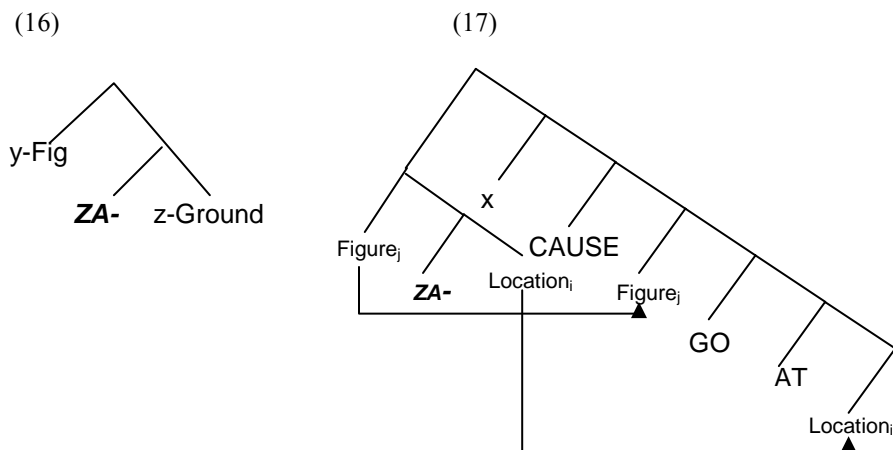
An alternative approach as far as the selectional requirements of the prefix are concerned might be to suggest that the requirements of the prefix must be satisfied before those of the verb, the Ground must be realized as the direct object if a verb is prefixed with either ZA- or OB-<sup>5</sup>.

The G argument of the Figure verb (if there is a G introduced by the Figure verb), will be bound by/coindexed with the G argument introduced/selected by the prefix which requires the G to be the DO as it is its internal argument<sup>6</sup>. Once this is done, the F argument of the prefix must be satisfied; it will be in the Instrumental case when there is an Agent. Semantic trees for a prefix and for a prefixed verb are given in (16) and (17) respectively.

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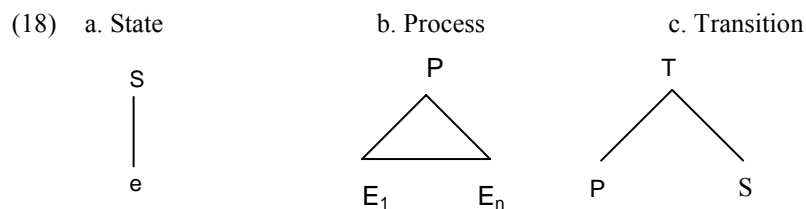
<sup>5</sup> Saying that selectional requirement of the prefix must be satisfied first does not amount to the claim that all prefixes have this requirement. As far as the locative alternation is concerned, only ZA- and OB- behave differently from other prefixes, only these two prefixes select Location as the DO. Other prefixes have no requirement regarding the Location in the locative alternation.

<sup>6</sup> It is unclear at this point which one of the paraphrases 'F covers G' or 'G is behind F' is better: they are sort of converse of each other. Except that with 'F covers G', we see that F is external and this might possibly be relevant in explaining why, in the possible absence of a causer with certain verbs, the F is realized as the subject.



In (16), the prefix itself has two arguments, the Figure (y) and the Ground (z). Given what has been said about the semantic contribution of the prefix ZA- above, the semantic relation between these two arguments is of the sort 'G is behind/covered with F'. In (17), the verb also has two arguments, the Figure and the Ground. The G argument of the prefix, which is realized as the direct object, binds the G argument of the verb (which does not need to be realized independently).

We also assume that *OB-* or *ZA-* add a *resultative* state to the Figure verb. In the process of event composition (in Pustejovsky's 1991 spirit), a *change-of-state* is calculated. According to Pustejovsky (1991), there are three primitive event types: State (S) defined as a single event (18a), Process (P) meaning a sequence of events identifying the same semantic expression (18b) and Transition (T) described as an event identifying a semantic expression, which is evaluated relative to its opposition (18c).



A simple Figure verb (P) combines with a prefix (S) and the complex structure becomes of type T, as shown in (19).

(19) Lit' 'pour' (P) + ZA (S) → ZAlit' (T)

An event value of a prefix, State, must be satisfied by an appropriate direct object, which is the location for *ZA-* and *OB-*, in view of the semantic meaning of these prefixes. We claim that when a new derived prefixed verb is

obtained and a prefix appears to be the core predicator of the complex predicate, the alternation is allowed, whereas when the verb stem remains the core predicator, the alternation is blocked.

The claim that Slavic prefixes are morphemes with an event value of State is explicitly discussed in Zaucer (2002).

### Conclusions

Our analysis shows that a finer grained classification of Russian locative verbs leads to some new findings. First, our data suggest that the distinction should be drawn between morphologically simple and prefixed locative verbs in R. While the Container-oriented locative verbs (unprefixed and prefixed) have the same syntactic structure in both E and R, syntactic appearance of the Content-oriented verbs depends on their morphological structure.

Having analyzed the semantic contribution of ZA- and OB- and having specified their meaning as something similar to “the Ground is behind/at/next to the Figure”, we assume that these prefixes subcategorize for/select a sort of Location argument; they subcategorize for a Locative direct object or license a template where the direct object has to be a location. The semantic template imposed by the prefix requires that the argument that occupies the direct object position be a Location/Ground argument.

As the selectional requirements of the prefix must be satisfied and can only be satisfied by the location, the Ground will be realized as the direct object, and the prefixed verb will enter the Ground frame.

We also assume that a location as object can either correspond to a location provided by the verb, or be compatible with the verb (this is in case the location is optionally expressed by the verb, sort of an implicit argument) or it is not provided by the verb at all and then we have what is called an unselected object in the sense of Spencer & Zaretskaya (1998). However, by unselected object we mean an argument which is not selected by the verbal root, but it is still selected by the prefix itself.

We also conclude that prefixes ZA- and OB- add a State to the verb. In the process of event composition, a *change* of state is calculated. A State must be satisfied by an appropriate direct object, the location, and a prefixed verb can now enter the Ground frame.

In short, the two main conclusions are as follows:

I. ZA- and OB- select a G (location) internal argument and a F external argument, which must be satisfied in that order and which bind the corresponding argument positions of the verbs to which they are prefixed, if these verbs have such arguments;

II. ZA- and OB- introduce a resultative State that must be satisfied by an appropriate direct object (location).

There are still a number of important questions to be addressed in the future. First, we are going to look at the R Figure verbs that can enter the Ground frame without a prefix (there is a very small class of such verbs, maybe just a few of them) and try to find out why is it that some R verbs alternate without the prefixes. Second, we will take a closer look at the verbs to which the ZA- and

OB- prefixes can be added, and try to figure out what determines the choice of ZA- vs. OB-.

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