

Polysemy of Verbal Prefixes in Russian

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Abstract: This paper proposes a scalar analysis of polysemy of Russian verbal prefixes. The lexical entry remains constant throughout all uses of a given prefix: it relates the event, denoted by the prefixed verb, to a scale. The specific kind of transition denoted by the prefix is the source of the similarities in meaning. The structure, into which the prefix is inserted, varies and determines the scale along which the event is measured out, which may be a path (with verbs of motion), a scale of change, or the temporal trace of the event. It is demonstrated that the semantic differences go hand in hand with structural differences and that the meaning of a prefix is predictable based on the event structure of the verb it attaches to. If the verb lexicalizes a scale of change, the prefix must measure out the result, mapping the event onto a scale, which is the complement of the result. If the verb contains conflated material and is incompatible with a result, the only available position is above aspect, where the superlexical prefix measures out the time of the event. A direct object may serve either as the resultee undergoing a change of state or as the measuring scale (as in the case of spatial and consumption verbs). Many verbs are flexible, and then the prefix may take on different meanings and the structure depends on whether the event is interpreted as involving a change of state or an unbounded activity.

1. Introduction

The polysemy of Russian verbal prefixes is a well-known problem. The examples below illustrate how a single prefix can take on eight different meanings with the same verb, depending on the structure of the sentence. Though the prefix and the verb remain the same throughout the examples, a native speaker has no trouble interpreting these sentences.

- (1) a. Pianist pere-igrat ruku.
pianist pere-played hand
'The pianist over-exercised a hand by playing too much.' (about musicians)

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- (1) b. Akter pere-igral svoju rol'.
actor pere-played his part
'The actor over-acted his part.'
- c. Geroj pytalsja pere-igrat' svoju žizn'.
character tried pere-play his life
'The character tried to re-enact his life.' (repetition)
- d. Komanda pere-igrala protivnika.
team pere-played opponent
'The team out-played the opponent.' (to win in sports)
- e. Rebenok segodnja pere-igral i kaprizničæet.
child today pere-played and grizzles
'The child played for too long today and is cranky.'
- f. Orkestr pere-igral vse marši.
orchestra pere-played all marches
'The orchestra played every march.' (distributive)

In this paper I show how the different uses of a single prefix share a core conceptual meaning while the source of the differences is the structural meaning component which is a function of the syntactic position of the prefix.

There have been several works within cognitive linguistics (e.g., Dobrušina et al. 2001, Endresen et al. 2012, Janda and Lyashevskaya 2013, Sokolova 2012) showing that the prefix always retains its meaning. The general idea is that there is a single central prototypical meaning and a web of interrelated meanings is derived from it. Descriptively, this model is very adequate and accounts for the similarities in meanings while fully acknowledging their differences. One of the problems is lack of agreement on which meaning to choose as the prototype and a certain arbitrariness of which meaning in the web is chosen in a given context. Constructivist approaches allow the meaning to depend upon the construction in which the prefix appears, thus relating the choice of meaning of the prefix to the argument structure, but seem to lack predictive or explanatory power.

The opposite direction concentrates on the structural differences, ignoring the similarity in meaning. The works of this direction (e.g., in Svenonius 2004a) divide the prefixes into classes according to their syntactic properties (lexical, superlexical, and purely perfectivizing). However, many prefixes (e.g., *za-*, *ot-*, *s-*, *pro-*, *po-*, *do-*, *pere-*, *na-*) have a corresponding instantiation in all of these classes, and this distribution seems systematic. There are several exceptions (e.g., *raz-*, *pri-*, *v-*), which are always lexical, but these are also systematic.

My analysis rests on the results of both approaches, as I claim there are two sources of prefix interpretation: I assume that one part of the meaning

comes from the lexicon and another part of the meaning comes from the syntactic structure (cf. Borer 2005, Ramchand 2008b). As I argued in Tolskaya 2015 for motion verbs, the conceptual meaning remains constant in all instantiations of the prefix while the syntactic structure provides the difference. In the present paper this hypothesis, introduced for the narrow class of motion verbs in Tolskaya 2015, is expanded to a significantly larger set of verbs, presenting a structure that is systematic, predictable, and acquirable.

The crucial innovation is that the uniform-prefix interpretation is made possible through application of the notion of scales (following Filip 2008, Rappaport Hovav 2008, Rappaport Hovav 2011) to the verbal domain (following Kagan 2013). Allowing the prefix to interact with an abstract scale lexicalized by the verb, rather than directly with the verb, helps both to describe the semantic contribution of the prefix more precisely and to apply this semantic contribution to diverse verbal classes.

In Table 1 I illustrate how the meaning of each prefix combines with the structure. Each prefix has a single lexical entry, specifying a relationship (e.g., ‘exceed’ for *pere-*) between an event and a scale with respect to which the event is measured out. This is similar to the Scale Hypothesis, independently suggested by Kagan (2013: 488–489), according to which “a verbal prefix imposes a relation between two degrees on a scale, one of which is associated with the event denoted by the verbal predicate, and the other is the standard of comparison.” However, in my analysis the structure tells us what exceeds what. The path of a motion event may extend beyond a boundary in space or the dimensions of the direct object, the extent of an event may exceed a point on a scale lexicalized by the verb, or duration of an event may exceed a temporal scale. Thus, in Table 1, the relationship, specified by the prefix, remains constant in each of the structural configurations (columns), and the argument structure of the relationship remains constant for each prefix inserted into the configuration (rows).

Thus, the relationship introduced by *pere-* is ‘exceed’. *Pro-* is similar to ‘through’, and the syntax decides what interval (temporal, spatial, or degree) is covered. *Do-* refers to reaching a certain point, and this point (temporal, spatial, or readiness) is specified by syntax. *Za-* refers to entering a certain location, state, or activity, while *ot-* is the reverse transition, out of a specified location, state, or activity.

The structure of the paper is as follows: in the next section I introduce the background assumptions, particularly the interaction of Ramchandian first phase syntax with telicity and perfectivity, and show how the choice of a lexical vs. superlexical prefix depends on whether the verb lexicalizes a bound scale of change. Then in the subsequent sections, I look at each structural configuration (i.e., each row of the table) in detail, showing how each interpretation of each prefix emerges in a particular context. I start with directional motion verbs and paths and then move on to a spatial configuration where

Table 1. Prefix position and interpretation

	pere- 'exceeding'	pro- 'through'	do- 'up to'	ot- 'off' (+ -)	za- 'into' (- +)
I. Idiomatic lit.	pere-varit' over-cook digest	pro-brat' through-take affect deeply	do-bit' up.to - beat complete	ot-vertet'sa away-twist-ref avoid	za-past' into-fall fall in love
II. R(p; ground)	pere-bežat' run across	pro-bežat' run through	do-bežat' run up to	ot-bežat' run away	za-bežat' run into
III. R(p, theme)	pere-gorodit' block	pro-bit' break through			
IV. R(p, scale)	pere-varit' over-cook	pro-varit' cook through	do-varit' complete cooking	ot-varit' cook completely	za-varit' brew (tea)
V. R(e, time)	pere-plavat' over-swim	pro-plavat' swim for a time	do-plavat' complete swimming	ot-plavat' stop swimming	za-plavat' start swimming

the direct object itself serves as a measure rather than a holder of the result state. Then I discuss the lexicalized scales and their shapes and show how the prefix choice depends on the scale shape. Then the discussion proceeds to the higher superlexical prefixes. In the conclusion I discuss the predictive value of my analysis, illustrating how the prefix meaning depends on the structural properties of the verb that the prefix combines with.

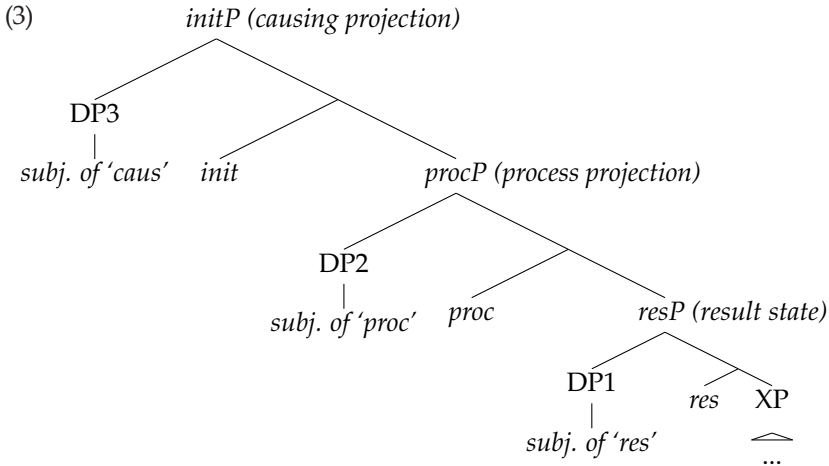
2. Lexical and Superlexical Prefixes in First Phase Syntax

The proposed analysis is rooted in “the first-phase syntax” of Ramchand (2008b) and a cartographic approach to syntax, where syntactic trees are built from submorphemic features. Following the nanosyntactic approaches (e.g., Starke 2009, 2011 and Caha 2009, summarized in Baunaz and Lander 2018), my analysis assumes strict syntax-semantics mapping and phrasal spellout. Each syntactico-semantic feature is an independent head that projects, following the “one feature—one head” maxim (Cinque and Rizzi 2008: 50, Kayne 2005: ch. 12). This leads to extremely detailed syntactic structures consisting of features hierarchically ordered as syntactic heads according to the functional sequence.

2.1. Event Decomposition

In first-phase syntax an event may contain initiation, process, and result sub-events. Such decomposition is governed by the Principle of Event Composition (Ramchand 2008b), where initiation leads to process and process potentially leads to a result state. Each of these subevents, when present, is represented as its own projection, ordered in the hierarchical embedding relation as shown below in (2).

- (2) **Principle of Event Composition** (Ramchand 2008b: 46): If a head X which introduces an eventuality variable e_x , embeds a projection YP where Y introduces the eventuality variable e_y , then the structure is interpreted as $e_x \rightarrow e_y$ (e_x ‘leads to’ e_y).



A prefix may be attached at different levels. Here I rely crucially on the lexical/superlexical distinction (Isačenko 1960, Romanova 2004, Svenonius 2004b, Babko-Malaya 1999, Schoorlemmer 1995), where lexical prefixes are verb internal, while superlexical prefixes are outside of the scope of the VP. In first-phase syntax, the lexical prefixes, as potential argument-structure modifiers, are attached to *res*.

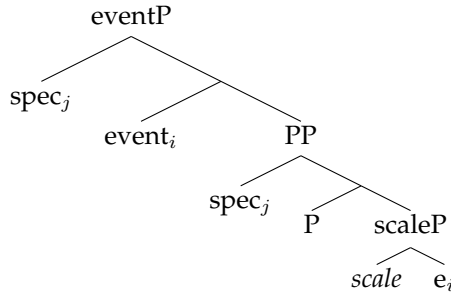
The temporal superlexical prefixes (referring to inception, duration, and completion) modify the event itself and do not change the argument structure or the core meaning of the base verb and are outside of the scope of secondary imperfectivization; therefore, they must be located higher, above the aspect head (Pereltsvaig 2006). I suggest that they occupy a second, higher, aspectual head, where they relate the definite time of the event to its temporal trace.

2.2. Lexical and Superlexical Prefixes

It has been argued that the P elements have some similar structural properties whether used as prepositions, particles, or prefixes (Asbury et al. 2006, Matushansky 2002, Zeller 2001, Pantcheva 2007, Svenonius 2004b, Gehrke 2008). Accordingly, I suggest that in every use the P element heads a PP, with a scaleP (of which path is a subclass) as a possible complement, and the PP is a complement to an event-head: *result*, *aspect*, or *process* projection.

Thus, the emerging generic structure looks as follows:

(4)

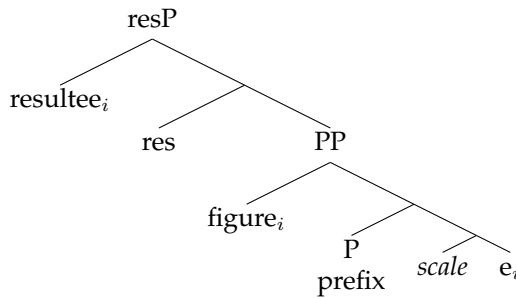


The scale head creates a scale (i.e., an ordered set of values associated with the event variable) which is closed at the event phrase level. This ensures that the scale is associated with the closest event head (i.e., is a set of evaluations of the contextually relevant quality of that event).

The P head corresponds to the RHEME, which is defined by Ramchand (2008b) as the true internal argument of a subevent head, which acts as a further modifier or description of the event with which the P head combines by event identification.

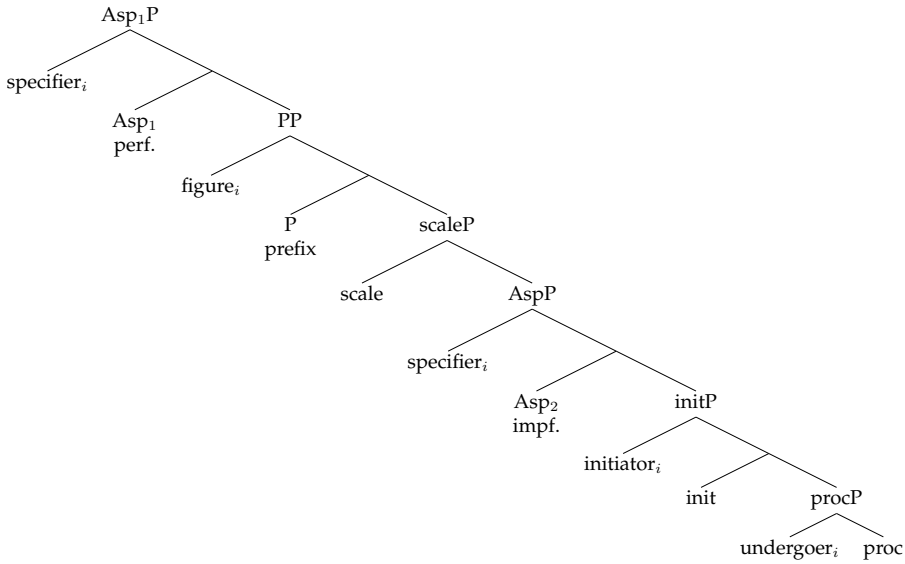
The relevant event head can be the result head, in which case the scale measures the extent of the result state, or aspect, in which case the temporal trace of the event provides the scale and the temporal boundaries of the event are established by the prefix.

(5) Lexical prefix as a complement of the result head:



Temporal superlexical prefixes appear with the resultless *init-proc* verbs, where the initiator is coindexed with the undergoer, so the subject is the specifier of all the event projections in (6).

- (6) Superlexical prefix as a complement to an aspect head (the temporal trace introduced by *Asp*₂ provides the scale):



These different positions yield contrastive syntactic properties. The prefixes in *res* are the lexical prefixes; they attach mostly to perfective or telic stems (if the verb is supplied with the option), allow the verb to form secondary imperfectives, and can change the argument structure of the verb. The prefixes above *Asp*₂ are the superlexical prefixes, they attach to imperfective or atelic stems, do not fall inside the scope of secondary imperfectives, and do not change the argument structure of the verb.

Both lexical and superlexical prefixes, being attached to an imperfective verb, invariably change the aspectual value of the hosting verb to perfective (Borik 2009). While prefixation is not the only morphological mechanism associated with aspect but exists along with semelfactive suffixation, stem alternations, and purely perfective unprefixated stems, the connection is quite robust.

I follow Ramchand (2008a) in interpreting perfectivity as definiteness. The *Asp* head is a function that yields a time variable *t* in the temporal trace of the event *e*, and *t* may be definite (if perfective) or indefinite (imperfective). Ramchand (2008a) uses a second, lower *Asp*₂ head to host the secondary imperfective suffix. The two *Aspect* heads are required to handle a superlexical prefix stacked above secondary imperfective. I suggest that two *Asp* heads are always present, where the higher *Asp*₁ head introduces definite or indefinite *t* variable, while the lower *Asp*₂ creates the temporal trace of the event.

2.3. Scale of Change and Prefix Interpretation

The syntactic position of the prefix (lexical vs. superlexical) is directly linked to the event type. The verbs that obligatorily involve change, particularly change of location or change of possession, co-occur only with the lexical prefixes and are incompatible with the superlexical prefixes. Verbs that are incompatible with a change-of-state reading, on the other hand, only appear with the superlexical prefixes. There is also a large class in the middle compatible with both, where the event may or may not involve change, depending on context.

If the verb is compatible with a change-of-state reading, the amount of change is measurable, and then the rheme of the event is a scale measuring the change occurring during the event. Following Filip (2008), I characterize a scale in terms of three parameters:

- **a set of degrees** (measurement values) totally ordered with respect to some
- **dimension**, which indicates the property being measured (volume, temperature, length, weight, loudness, intensity, etc.), and
- **an ordering relation** on the set of degrees, which distinguishes between predicates that describe increasing properties (like tall) and those that describe decreasing properties (like short). Here, the default ordering relation is '>' greater than, which is taken to mean having been assigned a higher/greater degree on a relevant property scale. It is reflexive, antisymmetric, and transitive (i.e., a partial-order relation).

The mechanism by which parts of measuring scales are mapped onto parts of events, as described in Filip (2008), presupposes that the ontological domains of events (E), individuals (I), and times (T) each has the structure of a complete join semilattice, and is (partially) ordered by the part relation (cf. Link 1987, Bach 1986). The lattice structures are related by means of structure-preserving mappings, or homomorphisms.

For example, a drinking event can be mapped to a scale consisting of a set of increasing quantities of wine. Thus, a scale that measures quantities of wine (for example a sip, one glass, a bottle, etc.) will provide a criterion for ordering drinking events according to the quantities of wine drunk: namely, an event of taking a sip of wine may develop into a larger event of drinking one glass of wine, which in turn may eventually lead to an event of drinking two bottles of wine, etc. We get an ordering of events in which an event of drinking one glass of wine can be viewed as "a more developed version" (Landman

1992: 23) of an event of taking a sip of wine, and so on, with smaller events constituting stages of larger ones.

It is precisely this type of an ordering of events that satisfies the input requirement of the maximalization operator MAXE, described in Filip (2008), which results in telicity under Filip's definition, and it is also this ordering that allows a prefix to interact with the scale.

Thus if a verb has a scale of change, the scale is gradable and has an ordering relation (i.e., a direction), which in many cases can be reversed. If there is no directed scale of change, such reversal is impossible. Hence I use the possibility of such reversal by adding *obratno* 'back' to a verb as a test for availability of the scale of change. It has to be admitted that in some cases a reversal of a clearly present scale of change is impossible for pragmatic reasons, for example, in verbs of cooking; if something is cooked, the change cannot be undone.

2.4. Reversal Test for Scale of Change Availability

Keeping in mind these limitations, I suggest that for cases where reversal of change is pragmatically possible. There is a strong relationship between the presence of scale of change, compatibility with its reversal by *obratno* 'back', and prefix selection. I searched for combinations of a hundred verbs from a list of common verbs with the prefixes *za-*, *ot-*, *do-*, *pere-*, and *pro-* and checked whether the prefixes are used as lexical, superlexical, or both. Whether the prefix is lexical or superlexical is generally clear from context for a native speaker, and I also searched for secondary imperfectives to exclude superlexical prefixes, which are incompatible with secondary imperfectivization. Then I checked whether each verb is compatible with the restitutive *obratno*. I performed online searches for the desired combination using the blogs.yandex.ru search mechanism. Searching blogs proved more productive than using corpora, as the language use there is more colloquial and the prefix use appears freer than in literary sources. I also found the method more reliable than google searches because dealing with blogs, when in doubt, I could check both context and language in the blog.

It turns out that the verbs presumably entailing scalar change, as confirmed by compatibility with the restitutive *obratno*, are precisely the verbs that are only compatible with the lexical prefixes, and perfectivity entails telicity for them. There is also a class of verbs incompatible with result readings and lexical prefixes (e.g., 'smile', 'love', nondirectional motion verbs), and these verbs are always atelic. However, there is also a large class of flexible verbs that allow both lexical and superlexical prefixes, as exemplified by a subset of the data in Table 2 (see full data table in the Appendix). This class of verbs is not so straightforward, as there are some accidental gaps and idiomatic meanings, which I will discuss later. Yet the sample in Table 2 illustrates the general pattern clearly: prefix selection is tightly connected to the presence

of a scale of change, and the more lexical prefixes are compatible with the verb, the more superlexical prefixes are ruled out. Thus even the verbs that allow both seem to demonstrate a preference towards one class where they are frequent with a wide range of prefixes, while the prefixes from the other class are less frequent and under more restricted contexts.

Table 2. Compatibility with prefixes and the result feature

Verb	translation	lexical		superlexical			obratno
		za	ot	za	ot	pro	
letet'	fly _{DIR}	yes	yes	no	no	no	yes
brat'	take	yes	yes	no	no	no	yes
lovit'	catch	yes	yes	no	no	? yes	yes
učit'	teach	yes	yes	no	no	? yes	yes
sidet'	sit	yes	yes	no	yes	yes	no
ležat'	lie down	yes	yes	no	yes	yes	no
govorit'	talk	yes	yes	yes	yes	yes	no
xodit'	walk _{NONDIR}	no	yes	yes	yes	yes	no
pet'	sing	no	yes	yes	yes	yes	no
letat'	fly _{NONDIR}	no	no	yes	yes	yes	no
ulybat'sja	smile	no	no	yes	yes	yes	no

The verbs compatible with *obratno*, shown in the first four lines, involve transfer of location or of possession (sometimes in a metaphorical sense, as in the case of teaching as transfer of knowledge). The directional verbs necessarily have a path, expressed by an overt PP or an adverb. In some cases where it is obvious from context, the path may also be implicit. The verbs of transfer of possession also require a goal. This seems consistent with the assumption that these verbs always involve change since (directional) running cannot happen without a change of location in the process. Thus, the meaning of the prefix is usually predictable, even though it is lexical, and maps the event to the path. Some verbs (exemplified by 'teach' and 'catch' in Table 2) can be coerced into a resultless reading for some speakers, and to the extent that they can be envisaged without producing change, they are compatible with the durational superlexical prefixes. For example, it is possible to spend all summer catching butterflies if the general population of the butterflies does not decrease or to spend years teaching without the overall amount of knowledge being significantly affected.

Uses of such verbs with *obratno* are rare, but the following examples were found on the internet and sound quite natural. The adverb, then, may refer to a metaphorical movement along an abstract scale.

- (7) a. On kidal shariki vverx i **lovil** ix **obratno**.
 he threw_{IMPF} balls up and caught_{IMPF} them back
 'He (the juggler) threw the balls up and caught them back.'
- b. Ot-učil mozg dumat', nado sročno **učit'** **obratno**.
 OT-teach brain think need urgently teach back
 'I disaccustomed my brain from thinking, it is urgently necessary to teach it back.'

Out of 105 common verbs, 48 verbs follow the pattern of being compatible exclusively with lexical prefixes and with the restitutive *obratno* 'back'. When such verbs are transitive ('throw', 'give') the direct object is obligatorily present and undergoing change. If they are intransitive ('walk', 'run'), then it is the subject undergoing change of location.

There are 17 verbs on the other end of the spectrum, as exemplified by 'fly' and 'smile' in the last rows of Table 2. These verbs are incompatible with lexical prefixes but freely compatible with superlexical prefixes. Most of these verbs are intransitive, or if there is a direct object, it is optional and not undergoing any change.

The remaining 40 verbs display mixed properties: five verbs ('seek', 'catch', 'build', 'do', 'teach'/'learn') fall into the pattern discussed above: they normally entail a result and prefer the lexical prefixes, but some speakers under certain condition accept them with durational superlexical prefixes in an interpretation not involving any change to the object. These verbs are transitive and the direct object cannot usually be dropped.

Six more transitive verbs ('write', 'cook', 'play', 'watch', 'read', 'listen') are compatible with both lexical and superlexical prefixes and are semantically incompatible with restitutive *obratno*, as they involve an unrecoverable change. These verbs are flexible and can easily be used in a transitive resultative reading or as an atelic process.

The other 27 verbs prefer superlexical prefixes but are compatible with some lexical prefixes with an idiomatic meaning and an unselected object. The meaning with the lexical prefix is highly idiomatic (though the meaning component of the prefix is still present). Twelve verbs are intransitive when unprefixated but combine with an unselected object when the prefix is added. For example when the verb 'to sit' is combined with the prefix *ot-* (which introduces movement away from ground) the resulting verb *ot-sidet'* is a transitive verb selecting body parts, mostly feet, as objects, with the literal meaning of 'to sit off one's foot' (i.e., to sit uncomfortably causing a foot to become numb

or a metaphorical loss of connection with the foot). However, when the same prefix combines with the verb 'to sing', the 'departing' meaning component is still there, but the resulting transitive verb *ot-pet'* 'to sing off' refers to the burial rite, and the direct object is the person buried.

To sum up the above discussion, the pattern shows that if a scale of change is obligatorily present (and cannot be suppressed), then the verb is compatible only with lexical prefixes; if the verb is incompatible with scalar change, then only superlexical prefixes may be added. However, the scaleless verbs are highly flexible and frequently allow coercion into a scalar-change reading, which is an ongoing productive process. For example, I have found several instances with the verb *ot-klikat'* which result from the combination of the prefix *ot-* and the English verb 'to click', recently borrowed to refer to mouse-clicking. The newly created verb refers to a painful sensation in a finger caused by excessive mouse-use. Occasionally the resultative verbs can also be coerced into a resultless meaning, but this process is much more restrictive and not as freely accepted.

The question then arises: why, while with some verbs both lexical and superlexical prefixation is possible, many verbs are only compatible with one class of prefixes? For example, superlexical prefixation is entirely impossible with verbs lexicalizing a scale of change, and particularly with verbs of directional motion. Thus, the verb *za-plyt'* 'ZA-swim_{DIR}' can mean 'to swim in/behind something', but never 'to start swimming'.

A possible explanation is that such verbs obligatorily lexicalize a scale of change with a salient transition point. If the lexicalized scale is bounded, the temporal trace of the event is bounded, and if the perfective Asp head introduces a definite *t* variable (after Ramchand 2008a) this definite temporal point corresponds to the prespecified bound of the temporal trace and cannot be further bounded by a superlexical prefix.

The relationship between perfectivity and boundedness of the Rheme ('apples' in (8)) is a well-known phenomenon with verbs of consumption and creation:

- (8) a. On el jabloki polčasa / *za polčasa.
 he ate_{IMPF} apples half.hour / *in half.hour
 'He was eating apples for half an hour / (*in half an hour).'
- b. On s'-el jabloki *polčasa / za polčasa.
 he ate_{PF} apples half.hour / *in half.hour
 'He has eaten the apples in half an hour / (*for half an hour).'

Similarly, if we make a perfective out of a verb lexicalizing a scale, the scale is bounded with a definite orientation, which is achieved by its combination with a lexical prefix. Thus (9a) is imperfective, the process is mapped to

the entire path to the forest, and the time moment on the temporal trace of the event is indefinite, and the subject can be located anywhere on the path. (9b) is perfective, and the result state is mapped to the end of the path, so the time moment of the event is definite precisely when the subject enters the forest. The definite *t* can only correspond to the salient transition point specified by the path, so it is impossible for a superlexical prefix to select a different, arbitrary, definite *t* (e.g., at the beginning point of the event).

- (9) a. on šel v les polčasa / *za pol-minuty.
 he walked_{IMPF} to forest half.hour / *in half-minute
 'He was walking to the forest for half an hour / *in half a minute.'
- b. on za-šel v les *polčasa / za pol-minuty.
 he za-walked_{PF} in forest *half.hour / in half-minute
 'He entered the forest *for half an hour / in half a minute.'

Thus, a superlexical prefix may only adjoin to a verb without a bounded scale of change, where the superlexical prefix selects the definite point, such as beginning or completion, on the unbound temporal trace.

3. Prefix Position and Interpretation

In the previous section I showed the relationship between the structure of an event and the syntactic position of the prefix it may combine with. In this section I show how prefix interpretation is related to its syntactic position and argument structure. In the subsequent subsections, each syntactic configuration (corresponding to the rows in Table 1) is discussed in detail. After a brief discussion of the idiomatic interpretation, I look at three possible configurations of the result projection, depending on the possible complements. Then I move up the tree to discuss the superlexical prefixes.

3.1. Idiomatic Meaning

The first class is the idiomatic prefixes. Like regular lexical prefixes, they are located in the result phrase and introduce the relationship denoted by the lexical entry of the prefix, but the meaning of the verb is not completely predictable. The verbs in this group contain empty, obscene (not exemplified) or unrelated roots, or *pro*-forms, so the main source of the meaning is the prefix.

The prefix, however, contributes its regular conceptual meaning, thus making the structural part of interpretation somewhat systematic and predictable. Thus *pere-* introduces the notion of exceeding even when the verb is substituted by a nonverbal *pro*-form (*togo*, genitive of 'that'), (10a) below.

The prefix *pro-* (10b) introduces the notion of missing or losing something (the origin of the idiom is the notion of counting crows as a useless distraction, so the meaning is to count crows throughout the relevant interval, such as when the subject was supposed to watch for his turn or his things). *Do-* introduces reaching a certain point, which, in the idiomatic use, tends to be something unpleasant, such as annoying someone to the point of boiling temper (10c). *Ot-* involves removing an annoying figure from the annoyed person (10d,e). *Za-* involves entering a new state, which can be death (10f), or making something new (10g).

So when the verbal root does not contribute a regular meaning, the main source of interpretation of the idiom is the prefix.

(10)	verb	gloss	idiomatic usage
	a. <i>pere-togo</i>	over-that _{GEN}	overdo
	b. <i>pro-voron-it'</i>	through-crow-V	lose/miss
	c. <i>do-stat'</i>	up.to-become (reach/get)	frazzle out
	d. <i>ot-stat'</i>	away-become	leave alone
	e. <i>ot-šit'</i>	away-sew	to rebuff
	f. <i>za-močit'</i>	za-make.wet	kill
	g. <i>za-figačit'</i>	za-fig _{INF}	make/hit

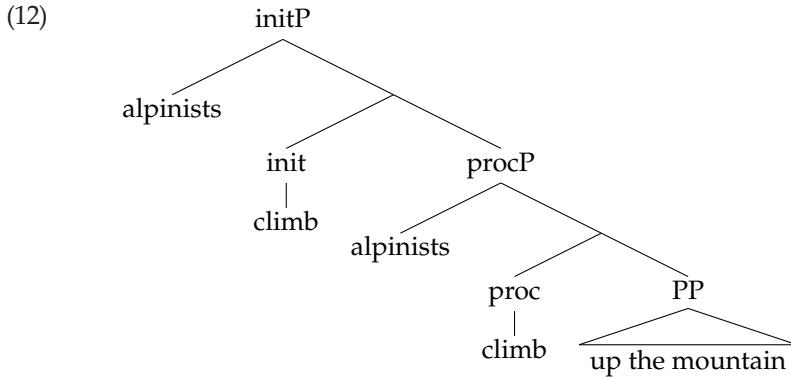
When these same verbs are used nonidiomatically, their properties, as well as meaning, may be different (e.g., (10c) can mean 'to reach', (10e) 'to sew', (10f) 'to make wet').

3.2. Directional Motion

The prefix may also combine with a directed path when attached to the verbs of motion that provide such a path.

The rheme complement of directional verbs is a path PP, which is usually overt or at least recoverable from context. For example, in (11) the unprefix form of *lezť* 'to climb' lexicalizes *init* and *proc*, and the process is mapped to the path PP ('up the mountain').

- (11) Alpinisty *lez-ut* v goru.
 alpinists climb_{DIR.IMPF-3PL} in mountain_{ACC}
 'Alpinists will climb a mountain.'



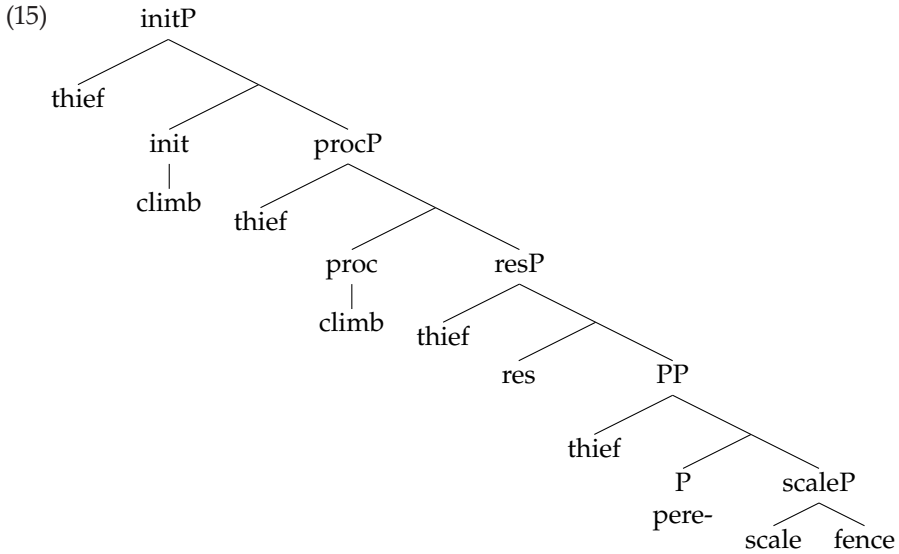
The unprefixed directional verb is atelic but has the potential to become telic, as expressed by the culmination condition. Here Kratzer's (2004) distinction between culmination condition and culmination requirements is useful. The atelic verbal phrase 'to climb the mountain' contains the information, where the event culminates (i.e., the direction of climbing):

- (13) Climb: $\lambda x \lambda [climb-up(x)(e) \& [culminate(x)(e) \leftrightarrow climb-to-top-of(x)(e)]]$
(Kratzer 2004)

The result projection turns the culmination condition into a requirement. A path provides a bounded scale of change, so reaching the end of the path is the natural culmination condition. The nondirectional motion verbs, on the other hand, can have no culmination condition or requirement because the lexical entry does not lexicalize a bound path. The *proc* complement is the unbounded Z-path (Zwarts 2005, Romanova 2007), which stands for Zwarts's path, that is paths that overlap, cross, and go back, which describes the sporadic movement without a goal denoted by nondirectional motion verbs. Hence, no final point may be specified.

Thus, because the lexical entry of directional verbs contains the culmination condition, they may spell out *init-proc-res* function sequences, and the subject (or direct object) is the figure undergoing change.

- (14) Vor pere-lez čerez zabor.
thief over-climbed across fence
'The thief climbed over the fence.'



- (16) a. $\exists e, e', e'', p, s. \text{climb}(e) \& \text{initiator}(e)(\text{thief}) \& [e \rightarrow e'] \& \text{climb}(e')$
 $\& \text{undergoer}(e')(\text{thief}) \& [e' \rightarrow e''] \& \text{climb}(e'') \& \text{resultee}(e'')(\text{thief})$
 $\& \text{rheme}(e'')(p) \& \text{figure}(p)(\text{thief}) \& \text{pere}(p)(s) \& \text{scale}(s)(\text{fence})$
- b. The climbing event, of which the thief was the initiator, leads to a climbing event e' , of which the thief is the undergoer, which leads to result climbing event e'' , of which the thief is the resultee, which is mapped to the path p , of which the thief is the figure. The path p is in an exceeding (*pere-*) relationship with the scale s , created by the scale head, which a set of values of the contextually relevant dimensions of the fence.

The exceeding mapping relationship means that for every subpart of the fence-scale there is a corresponding subpart of the path (i.e., every subpart of the fence was climbed over), and there is an extra subpart of the event-path to climb off the fence. This coincides with Kagan's (2013: 492) observation that in the prototypical cases, such as 'crossing the border' or 'crossing the bridge' "crossing involves moving beyond a certain location, since that is the purpose with which crossing is performed," (i.e., crossing the bridge entails stepping off the bridge). Thus, my claim that the conceptual meaning of the prefix *pere-* is 'exceeding' does not contradict the intuition (cf. Janda 1988) that the most basic submeaning of *pere-* is 'crossing', since crossing, according to Kagan (2013: 492) entails that "an event participant advances along some scale or other (the path scale under the literal, spatial meaning), covers a particular interval on this scale, and reaches or exceeds the upper boundary of this interval." I choose the 'exceeding' submeaning as the most basic because it is more

general as it fits best with the examples in (1b, d, e) and is also easier to formally define through a relationship between subparts of an event and a scale.

Similarly, the prefixes *pro-*, *do-*, *za-*, and *ot-* specify the relationship between the result event and the ground.

(17) Prefix meanings:

- a. *pere-* exceeding mapping the relationship between the path of the event and the dimensions of the ground
- b. *pro-* ‘through’, the successive one-to-one mapping of subparts of the event-path and the dimensions of the ground
- c. *do-* ‘up to’, relates the end boundary of the path with the end boundary of the ground.
- d. *za-* a minus-to-plus transition, the beginning edge of the path is outside of a certain location, and the end boundary is at the ground
- e. *ot-* a plus-to-minus transition, the beginning edge of the path is at a certain location, and the end boundary is away from it.

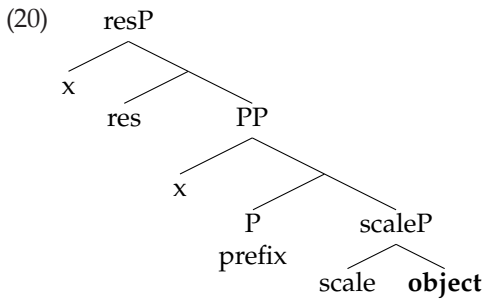
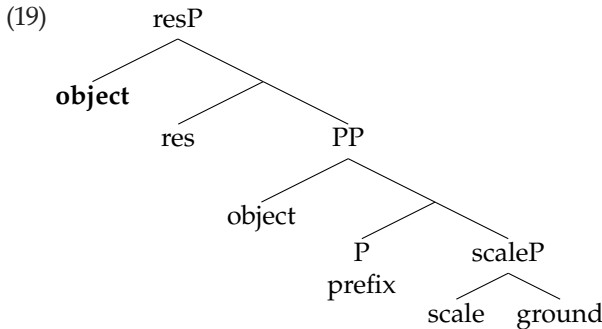
- (18) a. Vor pere-lez (čerez) zabor.
thief over-climbed (across) fence
‘The thief climbed over the fence.’
- b. Vor pro-lez v fortočku.
thief through-climbed in window
‘The thief climbed in through a window.’
- c. Alpinisty do-lezli do samogo verxa.
alpinists up.to-climbed up.to very top
‘The alpinists climbed up to the very top.’
- d. Malčik za-lez na čerdak.
boy into-climbed on attic
‘The boy climbed up to the attic.’
- e. Malčik ot-skočil ot kostra.
boy from-jumped from fire
‘The boy jumped away from the fire.’

Thus, the *res* head, coindexed with the *proc* and *init* heads, selects the obligatory path complement, and the result event is mapped to the PP *RHEME* complement headed by the prefix, which creates an oriented Rheme path based on the scale provided by the complement.

3.3. Spatial Reading

The spatial reading of prefixes forms another subclass of the lexical prefix readings (i.e., these prefixes are also located in the result projection, and consequently allow secondary prefixation and stacking of superlexical prefixes). What makes them special is that the direct object of the verb corresponds to ground rather than to figure (e.g., *pere-jti dorogu* 'cross the road', *pro-sverlit' stenu* 'drill through the wall').

There are two logical possibilities for a transitive verb to unify its argument structure with that of the prefix: either the direct object is the specifier of the PP (19), as demonstrated in the previous section, or the object is in the complement of P (20).



The crucial difference, which results in the different reading, is that the verbal direct object is located in the complement of *res*. For example, if one makes a hole through the wall, either the hole or the wall may be the direct object in Russian. However, the underlying result is the same: the hole is through the wall, so the hole (or the tool) is the external (figure) argument of the result phrase specified by the prefix while the wall is the internal (ground) argument, but either of the two may surface as the direct object.

When inserted into this configuration, the prefix *pere-* often denotes a “separation in material integrity” (Hale and Keyser 1987) brought about with the help of some instrument or means (Levin 1993).

- 21) pere-rezat' cut across
 pere-čerknut' cross out
 pere-bit' smash into two parts
 pere-kryt' cover (a flow)
 pere-rubit' chop into two parts
 pere-gorodit' block
 pere-ryt' dig across
 pere-lomit' break into two parts

When the direct object is the specifier, a complement is required, as we saw in the previous section. The spatial/dividing meaning, on the other hand, emerges when the direct object itself is the complement of the prefix, thus no other complement is allowed (22b). The figure is a contextually bound variable, so it may be implied by context ('the hole is through the wall'), it may be bound by an instrument (e.g., (22a) 'the hammer went through the wall') or by the subject ('This drill can easily drill through any wall').

- (22) a. pro-bit' stenu (molotkom)
 through-hit wall hammer_{INSTR}
 'to breach a wall (with a hammer)'

There is a hitting event, which leads to a hitting process, of which the wall is the undergoer, which leads to the hitting result event, and there is a one-to-one-mapping relationship ('through') between the hitting path and the dimensions of the wall. The resultee is a variable x, possibly bound by an instrument.

- b. *pro-rubi 'stenu na ulicu
 through-hew wall on street
 'to breach the wall into the street'

The wall is the ground, so no PP (na ulicu) may be added. The resultee complement position is occupied by the wall.

In the absence of the prefix the verb is not necessarily compatible with the same direct object, at least under the same interpretation:

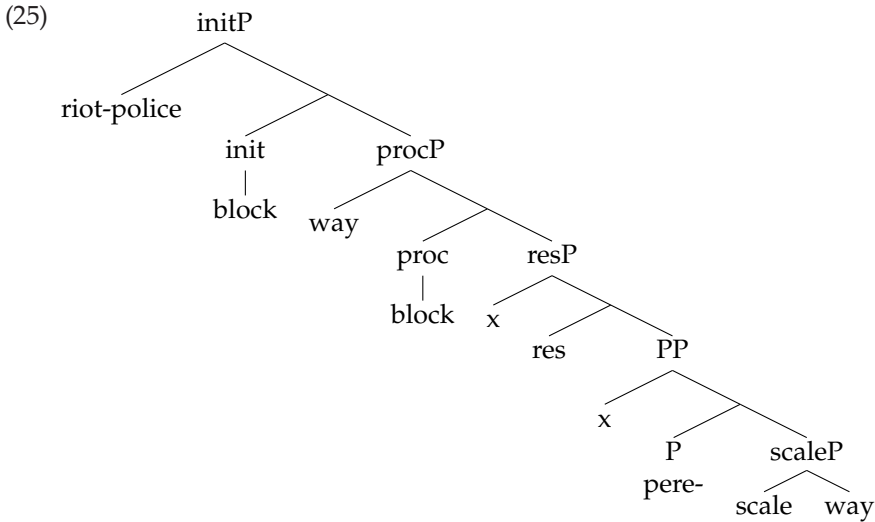
- (23) a. # bit' stenu
beat wall
- b. * gorodit' proxod
block way
- c. # ryt' dorogu
dig road

A secondary imperfective of the prefixed verb would be used in the given context. Thus the derivation of these result projections is different from the ones described in the previous section, where the *res* projection obligatorily selects the same complement as the *proc* projection. These verbs do not select a rheme in the unprefixed form, however; the prefix requires a complement. The exceptional strategy used in this case is to put the direct object as the complement position. Only one of the arguments may receive case from the verb, so when the direct object is the rheme, the resultee cannot receive case. Thus only a variable may appear there, bound by a subject or instrument that receives case elsewhere.

3.3.1. *Pere-* 'over'

The sentence below describes a situation where the riot police blocked the way, and the instrument (the object standing across the way) may be overt (e.g., trucks) or covert, so the result here is that there is something across the way:

- (24) OMON pere-gorodil proxod (mašinami).
riot.police over-blocked way_{ACC} (machines_{INSTR})
'The riot police blocked the way (with trucks).'



In this tree we see that in the result state there is something across the way. Now recall from the previous section that the lexical entry for *pere-* is ‘exceed’. In a static situation it is the dimensions of the object exceeding the usable part of the path. In a dynamic situation, like cutting, the path travelled by the instrument (e.g., an axe) exceeds the dimensions of the object.

The ‘exceed’ part of the meaning of *pere-* is quite salient. A corpus search of the verbs from this group shows that the most frequent objects are ropes, cords, wires, chains, throats, spines, roads, etc. (i.e., the objects are long and narrow), so that the length of the trajectory of the instrument is greater than the dimensions of the object cut. Furthermore, this prefix is usually incompatible (surprisingly, at first glance) with a situation where something is cut on a cutting board because the trajectory of the instrument starts above and expands beyond the object in a forceful movement. In the blocking situation, too, the instrument is generally something large and impassable while the path blocked has to be rather narrow.

As pointed out by Levin (1993: 157), the semantics of these verbs involves the notion of motion. In the course of the events denoted by the verbs, the instrument moves through the affected object, which brings about the separation in integrity. Kagan (2013) also argues that

although these are not, strictly speaking, verbs of motion, the stems do introduce a component of moving along a path (on the part of the instrument, rather than the agent or theme). In the course of this movement, the instrument “crosses” a spatial interval that extends through the affected object. Compare the verbs listed above [e.g., *pere-rezatj* ‘cut’, *pere-pilitj* ‘saw’, *pere-rubitj* ‘cut with an axe’] to the nonexistent **pere-*

The difference between (26a) and (26b) is the difference between directional and spatial readings:

- (27) There is a hitting event, which leads to hitting process, of which the wall is the undergoer, which leads to the result event, which is a 'through' type of event and...
- a. The result of the hitting event is through the (unpronounced) wall, and the resultee is the hole (directional reading).
 - b. The result of the hitting event is through the wall, and the resultee is an (unpronounced) instrument (spatial reading).

Such a configuration is possible only with two prefixes: *pro-* and *pere-*. It is hardly a coincidence that these two prefixes are also the only two that may assign accusative case to the ground in the absence of a preposition:

- (28) a. *pro-exat'* *ostanovk-u*
 pro-drive *bus.stop-ACC*
- b. *pere-exat'* *rek-u*
 pere-drive *river-ACC*

These prefixes also do not have corresponding prepositions. Pantcheva (2012) suggested that these two prefixes have a more complex substructure so that they lexicalize both the preposition and prefix and, hence, can assign case to the noun phrase. I will not go into the details of the analysis of the inner structure of prefixes and prepositions here, as this is a topic beyond the scope of this paper.

3.4. Lexicalized Scale

Rappaport Hovav (2008: 17) describes scalar change as follows:

Verbs which denote events of scalar change are those which lexically specify a scale. A scale is an ordered set of values for a particular attribute. A scalar change is one which involves an ordered set of changes in a particular direction of the values of a single attribute and so can be characterized as movement in a particular direction along the scale. In the case of the verb 'warm', the scale is composed of ordered values of the attribute warm, and a warming event necessarily involves an increase in the value of [warm].

which generally combine with goal PPs quite freely, and 'the window to Europe' is a constituent by all tests.

Verbs that offer a scale of gradual change and an end point (culmination) can combine with the result projection in such a way that the prefix relates the object being changed (figure) to the scale lexicalized by the verb. The undergoer of the change is the resultee, and the unpronounced scale is the complement of *res*: in the result state the object undergoes every change in the ordered set of changes along the scale as exemplified by the verbs below:

- (29) solit' salt
 varit' cook
 žarit' fry
 gret' warm
 oxladit' cool
 gruzit' load
 lit' pour
 -polnit' fill
 sušit' dry

3.4.1. Volume Extent Scales

Rappaport Hovav (2008) mentions three kinds of scales recognized in the literature: property scales, path scales (scales of position along a path), and volume/extent scales. Property scales are discussed in this section; path scales were discussed in the section on directional motion.

The crucial difference between property scales and volume/extent scales according to Rappaport Hovav (2008) is that “volume/extent scales are not actually lexicalized in the verb, but are rather provided by the direct object argument.” For example, when the verb ‘to cook’ is combined with *pere-* (excess) the resulting meaning is that too much cooking has happened to the object, while when a volume extent verb ‘to eat’ is combined with *pere-* (excess) the resulting meaning ‘to over-eat’ refers to an excessive amount of food consumed rather than to excessive eating that the food is undergoing. The object of property scale verbs is a proper undergoer and a figure undergoing change, so it receives accusative case as the resultee and allows passivization (*perevarennaja kartoška* ‘overcooked potatoes’). The objects of consumption verbs prefixed with *pere-* cannot appear in the accusative, but rather in the genitive (cf. ‘over-eat ON potatoes’), and no passives may be formed.

Thus, the property scale is the complement selected by the *proc* or *res* head while the object is the resultee—the figure moving along the scale or undergoing the consecutive changes along the scale. These must be distinguished from volume extent scales, where the direct object itself providing the scale is the complement of *res* (i.e., the event is happening to each subpart of the object, so the structure is similar to the spatial verbs discussed in the previous section, and, similarly, no overt complements or instruments may be present).

However, the resultee is the subject (i.e., the person who initiated the eating suffers the result of overeating). As such, the verb is intransitive in structure, with initiator, undergoer, and resultee coindexed.

The verbs with volume extent scales are characterized by inconsistent prefix selection. For example, when the verbs 'eat' and 'drink' are combined with *pere-*, *pro-*, and *do-* the consumed amount provides the scale of measurement. With *pro-*, possibly idiomatically, the meaning is to spend money/valuables on food/alcohol (*pro-pit' imuščestvo* 'through-drink possessions'). With *ot-* and *za-* the readings are spatial (take a bite off, with *ot-*) and to eat/drink to conceal something unpleasant (in *za-pit' lekarstvo* 'ZA-drink a medicine' the result is medicine behind water).

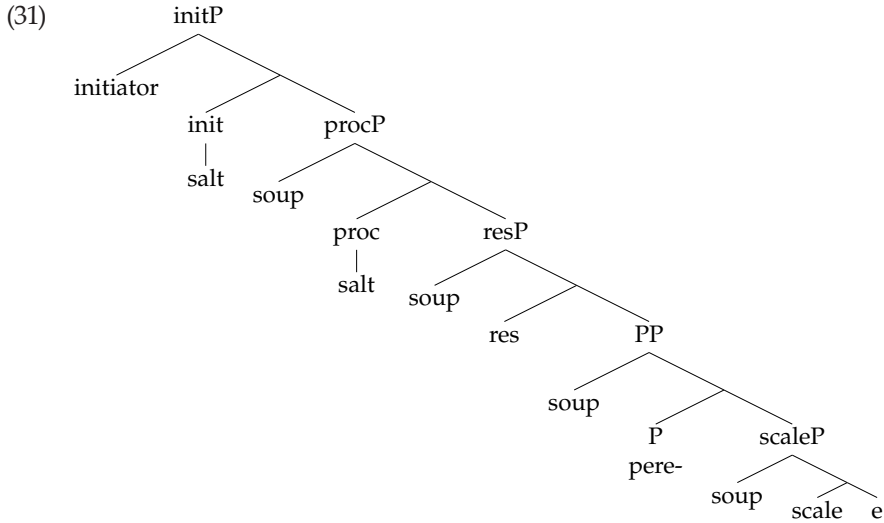
Having differentiated types of scales, we return to the verbs of scalar change with various prefixes, starting with *pere-*:

3.4.2. *Pere-* 'over'

When the result phrase is formed, the prefix *pere-* introduces a relationship (of exceeding in (30)) between the event and the scale selected by it. When the prefix is absent, the undergoer is undergoing every small change along the scale (e.g., the soup in *solit' sup* 'salt the soup' becomes more and more salty incrementally without necessarily becoming properly salted). When the prefix combines with the scale in the result projection, the event extends beyond the maximal point on the scale of change (of the maximum acceptable saltiness value on the saltiness scale in (30)).

- (30) Povar pere-solil sup.
 cook over-salted soup
 'The cook oversalted the soup.'

There is a salting event, initiated by the cook, which leads to the salting process of which soup is the undergoer, which leads to a result salting event, of which the soup is the resultee. There is a contextual measure function (of how much salt a soup needs) which was exceeded by the soup in the result state.



- (32) a. ScaleP: $\lambda x, e. \text{Scale}(x) \ \& \ \text{bounded}(x, f(\text{soup})) \ \& \ R_{\text{characterize}}(x, e)$
 b. PP: $\lambda p, e \exists x. \text{Path}(p) \ \& \ \text{figure}(\text{soup}, p) \ \& \ \text{pere}(p, x) \ \& \ \text{Scale}(x) \ \& \ \text{bounded}(x, f(\text{soup})) \ \& \ R_{\text{characterize}}(x, e)$
 c. resP: $\lambda e \exists p, x. \text{result}(e) \ \& \ \text{resultee}(\text{soup})(e) \ \& \ R(e)(p) \ \& \ \text{Path}(p) \ \& \ \text{figure}(\text{soup}, p) \ \& \ \text{pere}(p, x) \ \& \ \text{Scale}(x) \ \& \ \text{bounded}(x, f(\text{soup})) \ \& \ R_{\text{characterize}}(x, e)$
 d. procP: $\lambda e' \exists e, p, x. \text{process}(e') \ \& \ \text{undergoer}(\text{soup}, e') \ \& \ e' \rightarrow e \ \& \ \text{result}(e) \ \& \ \text{resultee}(\text{soup})(e) \ \& \ R(e, p) \ \& \ \text{Path}(p) \ \& \ \text{figure}(\text{soup}, p) \ \& \ \text{pere}(p, x) \ \& \ \text{Scale}(x) \ \& \ \text{bounded}(x, f(\text{soup})) \ \& \ R_{\text{characterize}}(x, e)$
 e. initP: $\lambda e'' \exists e', e, p, x. \text{Init}(e'') \ \& \ \text{initiator}(\text{the cook}, e'') \ \& \ e'' \rightarrow e' \ \& \ \text{process}(e') \ \& \ \text{undergoer}(\text{soup}, e') \ \& \ e' \rightarrow e \ \& \ \text{result}(e) \ \& \ \text{resultee}(\text{soup})(e) \ \& \ R(e, p) \ \& \ \text{Path}(p) \ \& \ \text{figure}(\text{soup}, p) \ \& \ \text{pere}(p, x) \ \& \ \text{Scale}(x) \ \& \ \text{bounded}(x, f(\text{soup})) \ \& \ R_{\text{characterize}}(x, e)$

The specifier of the scaleP (32a) is the *soup*, and it coincides with the figure, the resultee, and the undergoer. The specifier provides the intended saltiness of the soup and thus creates the functional standard on the scale. In the PP (32b) the scale combines with the prefix *pere-*, which creates a path *p* that ‘exceeds’ the functional standard on the scale *x*. The soup is also the specifier of the PP, as it consecutively obtains the salinities constituting the path. The PP is the complement of the *res*, so the result is mapped to the final point on the path. Since the result is a state, it is mapped to the state at the end of the path (i.e., to a state beyond the intended saltiness). The event variable in the complement

of the scale is existentially closed at the *res*P, so it is result state of salting, thus the scale characterising it consists of possible results of salting (i.e., salinity).

Thus, the result state of the soup is mapped to the end of the path over (i.e., exceeding) the functional standard.

3.4.3. *Pro-* ‘through’

Pro-varit’ seems to display properties of several groups of meanings, depending on context:

- (33) a. *Pro-varit’* sirop 15 minut.
 pro-cook syrup 15 minutes
 ‘Cook the syrup for 15 minutes.’ (from a recipe)
- b. *Pro-varit’* čičevicu do gotovnosti
 pro-cook lentils until readiness
 ‘Cook the lentils until well done.’ (from a recipe)

Though it takes a temporal complement, like superlexical prefixes (discussed in section 3.5.), it behaves like a lexical prefix. There is a direct object (syrup, lentils), a passive may be formed (*pro-vareennyj*) and secondary imperfectivization is possible (*pro-varivat’*).

Having established that *pro-* in this use is a lexical prefix, we have to decide whether the direct object is a figure or ground. The syrup is the undergoer and the resultee as it is changing along the “cookedness” scale and cannot be interpreted as a ground. The meaning is different from cooking through the syrup; the readiness is the criteria of the result rather than the requirement that cooking happens to every subpart of the syrup. Furthermore, a goal (*do gotovnosti* ‘until readiness’) may be added. Hence, the syrup is clearly the external argument of *res*. However, unlike with the directional verbs, there is no directional path PP required because the internal scale may be the rheme.

Yet, *pro-* has a strong preference to refer to going through real objects rather than abstract states, so even with scalar verbs it occurs more frequently in the structure described in the previous section, where the object is the ground (through the wall).

3.4.4. *Do-* ‘up to’

Do- ‘up to’ is somewhat similar to *pro-*, as it also refers to doing something properly and thoroughly. In both cases we are looking at a scale of readiness and refer to overcoming each subpart of it until the culmination point is reached. For *pro-* the crucial part is thoroughness, the fact that the activity

happens to every subpart of the object or scale, while for *do-* completeness (reaching the final culmination point) is crucial. Unlike *pro-*, *do-* does not require that all subparts of the scale are overcome. It is possible to use a *do-* prefixed verb in the context where an activity starts from some middle point and is completed. For example, (34) is compatible with Vasja starting and finishing the chapter on one occasion, or he could have taken an incomplete chapter (possibly started by a co-author) and finished it.

- (34) Vasja do-pisal glavu.
 V. do-wrote chapter
 ‘Vasja completed writing the chapter.’

3.4.5. *Ot-* ‘off’

As we saw in the discussion of directional motion verbs, *ot-* ‘off’ is the inverse of *za-* ‘into’ and refers to a plus-to-minus transition. With directional motion, the transition was from being at or near a certain location to being away from it. Now we are dealing with change-of-state verbs, so the undergoer changes states rather than locations. So *ot-* will now refer to a transition from being in a certain state to getting out:

- (35) Xozjajka ot-stirala skatert’.
 hostess ot-washed table-cloth_{ACC}
 ‘The hostess washed (the dirt off) the tablecloth.’
 (implication: tablecloth was dirty, #... though it was clean)

The verb ‘to wash’ contains a scale of change, one end of which is a completely dirty state, and the other one (culmination requirement) is completely clean. The starting point of this scale provides the previous state, from which the event happens.

3.4.6. *Za-* ‘into’

Za- is the opposite of *ot-* and refers to a minus-to-plus transition. For directional verbs, it means entering a certain location. Now that we are out of the spatial domain, it refers to entering a new state. While *ot-* means a transition out of the state contained in the scale of change provided by the verb, *za-* means entering a completely new state, implied by the verb but not contained in the scale of change it lexicalizes. Hence its uses are very diverse and not always predictable. For example, *za-stirat* ‘*ZA*-wash (clothes)’ never means entering a clean state but rather the fading of clothes from overly frequent washing.

Very frequently the new state is wear and tear, extreme annoyance, or death:

- (36) Fermer za-bil svin'ju.
 farmer za-beat pig
 'The farmer slaughtered the pig.'

However, this is not a part of the lexical entry of the prefix but follows from the combination of the lexical entry of the verb, with the requirement that the result state is radically different. (37) illustrates a positive change.

- (37) za-varit' čaj
 za-boil tea
 'to brew tea'

One of the uses of *za-* is with locative alternation verbs (Sokolova 2012), which display contrasts like 'load hay on the wagon' vs. 'load the wagon with hay'.

- (38) a. Voditel' za-gruzil paket v bagažnik.
 driver loaded bag_{ACC} in trunk_{ACC}
 'The driver loaded the bag into trunk.'
- b. Krasnoarmejcy za-gruzili kuzov jašikami.
 soldiers za-loaded truck.bed_{ACC} boxes_{INSTR}
 'The Red Army soldiers loaded the truck bed with boxes.'

(Sokolova 2012: 75)

In (38a) the direct object, the bag, is the figure that is entering the new location in the trunk, so it is a regular directional motion configuration discussed in the first subsection. In (38b) the scale, optionally lexicalized by the verb, is the ground. That is, the trunk changes along the scale of being fully loaded. The same alternation is available with *pere-*.

Most of the cases where the meaning of *za-* appears empty or purely perfectivizing also fall under this structure. The direct object enters a new state, determined by the lexical properties of the verb, which may often look like a pure perfective meaning.

3.5. Superlexical Prefixes, Temporal Interpretation

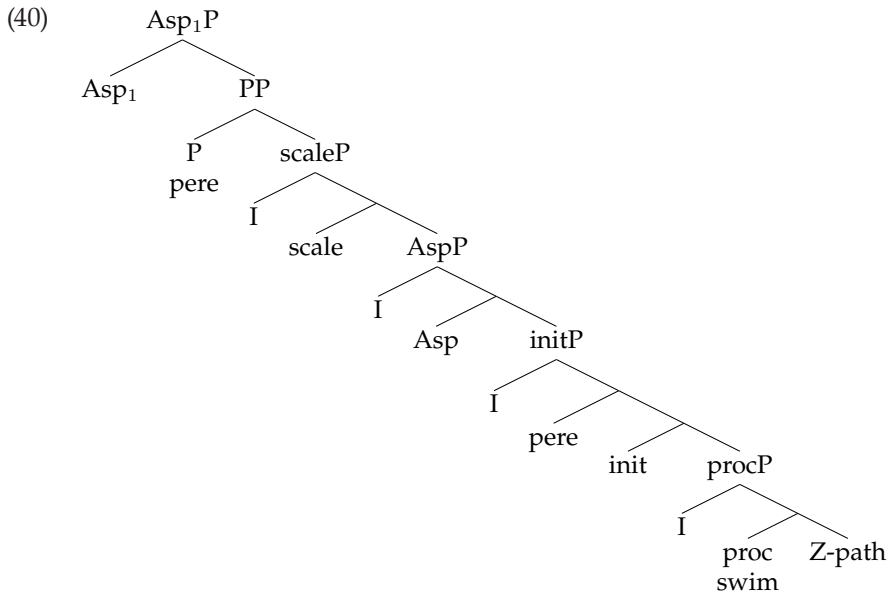
This section is dedicated to a subset of prefixes known as superlexical, namely to temporal prefixes, which, in terms of their semantic and syntactic properties, form a relatively large and coherent class. I do not go into the detailed

analysis of other superlexical prefixes, such as distributive and cumulative, as these are generally exemplified by one or two prefixes. My goal in this paper is to show how a syntactic position results in consistent properties across a large class of prefixes. It must be noted, however, that distributive and cumulative prefixes are located in a different position, higher than temporal, and require a separate, pluralizing head.

When the verb lexical entry contains *init-proc* and conflated material, such a verb may not lexicalize *res*. Thus no *resP* may be added, and there is no position for a lexical prefix. However, the temporal trace of the verb, when monotonic and unbounded, may provide the scale such that the prefix may map the definite (perfective) time variable to a specific point in the temporal trace. Thus with unergative verbs the prefixes head a PP which is a complement to the aspect head. For example, in (39) the contextual temporal function *f* is exceeded by the duration of the event:

- (39) Ja pere-plavala v bassejne.
 I over-swam in pool
 'I swam too much in the pool.'

There is a swimming event of which I am both initiator and undergoer, and there is a scale *x* with a functional standard *f*, of how much swimming I can endure, and the event time exceeds *f*.



The prefix *pro-* establishes a one-to-one mapping between the event and the temporal function of two hours so that the event lasts precisely for two hours:

- (41) Pro-xodit' dva časa.
 PRO-walk_{NON-DIR} two hours
 'to walk for two hours'

There is a walking event, and the definite time variable is mapped to the end of the temporal trace of the event (which is two hours long).

The prefix *do-* maps the time variable to the right edge of the temporal trace of the event, thus deriving the completive meaning, where the event extends up to the end.

- (42) Matros do-plaval rejs.
 sailer DO-swam_{NON-DIR} trip_{ACC}
 'The sailor sailed till the end of the trip (and then quit).'

There is a sailing event, and the time variable is mapped to the right edge of the temporal trace of the event, which is exactly as long as the trip takes.

The prefix *ot-* refers to a plus-to-minus transition from flying to nonflying, thus deriving a completely different completive interpretation:

- (43) IL-76 svoe ot-letal.
 IL-76 its_{ACC} ot-fly_{NON-DIR}
 '(The plane) IL-76 has done its flying (and will never fly again)'

The definite time variable is mapped to the plus-to-minus transition point on the scale (temporal trace of the event) (i.e., the time corresponds to the transition from flying to never flying again) so that the right edge boundary of the flying event temporal trace is the reference time.

The prefix *za-* introduces a minus-to-plus transition, from not working to working, thus giving rise to an inceptive interpretation:

- (44) Časy za-xodili.
 clock za-walked_{NON-DIR}
 'The clock started working.'

The definite time variable is mapped to the minus-to-plus transition event (from not working to working), inception, so the left edge boundary of the activity is the reference time.

Thus in the absence of a result scale the event provides a temporal, unbounded, monotonic scale which may be parsed with the help of superlexical prefixes. This temporal semantics goes hand in hand with superlexical syntactic properties: lack of secondary imperfectives, lack of passives, and the ability to stack above lexical prefixes.

In the case of stacking, the secondary imperfective appears in the lower Asp₂ head and creates an unbound temporal trace of the process subpart (following Ramchand 2008a) of the relevant event, which is, stripped of a salient transition point, a possible complement of a superlexical prefix.

4. Conclusion

The syntactic type of a verb and the type of rheme it takes allow us to predict how the prefix may be interpreted. The prefix establishes the shape of the path to which the event variable in the adjacent head is mapped. For this to happen, the complement must contain a measurable scale. Thus a prefix may be inserted in any configuration where it has an eventive head and a proper scale. However, the process of prefix insertion is restricted by the internal structure of the verbal phrase, which makes it possible to interpret a prefixed verb in context.

For example, consider the situation where the prefix is combined with a directional motion verb. The verbs of motion generally have a trajectory; however, the verbs that are not normally considered to be motion verbs can be coerced to be interpreted as motion verbs. For example, the following range of meanings is offered for the English verb *siren* in Borer 2005, which is also compatible with nominal syntactic structure.

- (45) a. The fire stations sired throughout the raid.
 b. The factory sired midday, and everyone stopped for lunch.
 c. The police sired the Porsche to a stop.
 d. The police car sired up to the accident.
 e. The police car sired the daylights out of me.

A parallel example from Russian is brought up in Rakhilina 1998, where practically any imperfective verb denoting manner of motion or sound may substitute 'move' and is thus compatible with a path complement and a lexical path-instantiation of the prefix *pro-*:

- (46) a. Diližans (pro-)exal / pyl / skol'zil / pilil / česal
 vehicle drove / floated / glided / sawed / brushed
 čerez derevnju.
 through village
 'The vehicle drove /floated/glided/sawed/brushed through the village.'
- b. Diližans (pro-)molotil / uxa / xljupal / uljuljuka
 vehicle hammered / hooted / sloshed / screamed
 čerez derevnju.
 through village
 'The vehicle hammered/hooted/sloshed/screamed through the village.'²

However, the 'making noise along the way' interpretation is not available with potentially addressed noise production that has its own lexicalized path, the direction of the communication. Consequently, the prefix *pro-* may only map the event to the length of the phrase/text/song that is shouted.

- (47) Mal'čik pel / kričal / uljuljuka čerez derevnju.
 boy sang / shouted / screamed / through village

Impossible interpretation: 'The boy sang /shouted /screamed (while walking) through the village

Available interpretation: 'The boy sang /shouted /screamed (to smb.) across the village.'

So, a nonmotion verb can be forced into the directional configuration if it does not lexicalize its own rheme (such as the song in the singing event in (47)). Similarly, a directional verb cannot be forced into a nondirectional configuration because it lexicalizes a rheme. If the lexical entry states that a verb obligatorily selects path as a complement and the verb is a result verb, this is not easily overridden by context or world knowledge. When it does not, the missing path projection can be lexicalized by a separate lexeme, creating a directional structure with a nondirectional verb. However, if the verb is unergative with conflated material, it does not fit into such a structure, as the conflated material occupies the rheme projection, leaving no room for a directional path.

In sum, in spite of considerable flexibility, the syntactic makeup of a verb, the features it lexicalizes, and its selectional properties allow speakers to predict which syntactic configuration a prefix may be inserted into and, consequently, which of the wide range of meanings it must take in a given sentence.

² Some speakers find such use odd, but even for such speakers, there is a contrast in acceptability between this example and (47).

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5. Appendix

Verb	translation	Lexical			superlex.			obratno
		za-	ot-	pro-	za-	ot-	pro-	
pomnit'	remember	yes	no	no	no	no	no	no
videt'	see	yes	no	no	no	no	no	no
sudit'	judge	yes	yes	no	no	no	no	no
chuvstvovat'	feel	no	no	yes	no	no	no	no
znat'	know	no	no	yes	no	no	no	no
dumat'	think	yes	no	yes	no	no	no	no
slyšat'	hear	yes	no	yes	no	no	no	no
verit'	believe	yes	no	yes	no	no	no	no
bit'	beat	yes	yes	yes	no	no	no	no
est'	eat	yes	yes	yes	no	no	no	no
pit'	drink	yes	yes	yes	no	no	no	no
paxnut'	smell	no	no	yes	yes	no	no	no
viset'	hang	no	yes	no	no	yes	no	no
žalet'	pity	yes	no	no	no	yes	no	no
služit'	serve	yes	yes	no	no	yes	no	no
l'ubit'	love	yes?	no	no	no	yes	no	no
terpet'	tolerate	yes?	no	no	no	yes	no	no
begat'	run.non.dir	no	no	no	yes	yes	no	no
bojat's'a	fear	no	no	no	yes	yes	no	no
ezdit'	drive.non.dir	no	no	no	yes	yes	no	no
kivat'	nod	no	no	no	yes	yes	no	no
maxat'	wave	no	no	no	yes	yes	yes	no

mečtat'	dream	no	no	yes	yes	yes	no
nadejät's'a	hope	no	no	yes	yes	yes	no
prygat'	jump	no	no	yes	yes	yes	no
smejät's'a	laugh	no	no	yes	yes	yes	no
spešit'	hurry	no	no	yes	yes	yes	no
stradat'	suffer	no	no	yes	yes	yes	no
sušestvovat'	exist	no	no	yes	yes	yes	no
torčät'	stick out, hang about	no	no	yes	yes	yes	no
ulybat's'a	smile	no	no	yes	yes	yes	no
volnovat's'a	worry	no	no	yes	yes	yes	no
zvuchat'	sound	no	no	yes	yes	yes	no
bolet'	be sick	yes	no	yes	yes	yes	no
meshat'	mix	yes	yes?	no	yes?	yes	no
gotovit'	cook	yes	no	no	no	yes	no
kolot'	prick trans	yes	yes	no	no	yes	no
varit'	boil	yes	yes	no	no	yes	no
čität'	read	yes	yes	no	no	yes	no
deržät'	hold	yes	yes	no	yes	yes	no
gl'adet'	look, gaze	yes	yes	no	yes	yes	no
goret'	burn	yes	yes	no	yes	yes	no
govorit'	talk	yes	yes	no	yes	yes	no
ležät'	lie	yes	yes	no	yes	yes	no
sidet'	sit	yes	yes	no	yes	yes	no
slušät'	listen	yes	yes	no	yes	yes	no
smotret'	watch	yes	yes	no	yes	yes	no
strel'ät'	shoot	yes	yes	no	yes	yes	no
spät'	sleep	yes	yes?	no	yes	yes	no

Verb	translation	Lexical			superlex.			obratno
		za-	ot-	pro-	za-	ot-	pro-	
igrat' (game)	play	no	yes	yes	yes	yes	yes	no
kričat'	scream	no	yes	yes	yes	yes	yes	no
orat'	shout	no	yes	yes	yes	yes	yes	no
pet'	sing	no	yes	yes	yes	yes	yes	no
plakat'	cry	no	yes	yes	yes	yes	yes	no
xodit'	walk.nondir	no	yes	yes	yes	yes	yes	no
igrat' (music)	play	yes	yes	yes	yes	yes	yes	no
kurit'	smoke	yes	yes	yes	yes	yes	yes	no
molchat'	keep silent	yes	yes	yes	yes	yes	yes	no
zvonit'	call, ring	yes	yes	yes	yes	yes	yes	no
stučat'	knock	yes?	yes	yes	yes	yes	yes	no
vrat'	lie	yes	yes?	yes?	no	no	yes	no
zhdat'	wait	no	yes	yes	no	no	no	no
bežat'	run.dir	yes	yes	yes	no	no	no	yes
brat'	take	yes	yes	yes	no	no	no	yes
brosit'	throw	yes	yes	yes	no	no	no	yes
darit'	give as present	yes	yes	yes	no	no	no	yes
dat'	give.p	yes	yes	yes	no	no	no	yes
dvinut'	move.trans	yes	yes	yes	no	no	no	yes
exat'	drive	yes	yes	yes	no	no	no	yes
gnut'	bend	yes	yes	yes	no	no	no	yes
idti	walk	yes	yes	yes	no	no	no	yes
katit'	roll.trans	yes	yes	yes	no	no	no	yes
kryt'	cover	yes	yes	yes	no	no	no	yes
kupit'	buy(p)	yes	yes	yes	no	no	no	yes

leč	lie down.p	yes	yes	no	no	no	yes	no	yes
leteť	fly	yes	yes	no	no	no	yes	no	yes
lezt'	climb, get in	yes	yes	no	no	no	yes	no	yes
nesti	carry	yes	yes	no	no	no	yes	no	yes
past'	fall	yes	yes	no	no	no	yes	no	yes
platit'	pay	yes	yes	no	no	no	yes	no	yes
plyt'	swim	yes	yes	no	no	no	yes	no	yes
prosit'	ask	yes	yes	no	no	no	yes	no	yes
pustit'	let in	yes	yes	no	no	no	yes	no	yes
rasti	grow	yes	yes	no	no	no	yes	no	yes
slat'	send	yes	yes	no	no	no	yes	no	yes
sledovat'	follow	yes	yes	no	no	no	yes	no	yes
stavit'	put	yes	yes	no	no	no	yes	no	yes
sunut'	shove	yes	yes	no	no	no	yes	no	yes
taschit'	drag	yes	yes	no	no	no	yes	no	yes
terjat'	lose	yes	yes	no	no	no	yes	no	yes
valit'	bring down	yes	yes	no	no	no	yes	no	yes
vernut's'a	return, turn with prefix	yes	yes	no	no	no	yes	no	yes
vesti	lead	yes	yes	no	no	no	yes	no	yes
iskat'	seek	yes?	yes	no	no	no	yes?	yes?	yes
t'anut'	stretch	yes	yes	no	no	no	yes?	yes?	yes
zvat'	call	yes	yes	no	no	no	yes?	yes?	yes
učit'	teach	yes	yes	no	no	no	yes?	yes?	yes?
iskat'	seek	yes?	yes	no	no	no	yes	yes	yes?
delat'	do	yes	yes	no	no	no	yes	yes	yes?
lovit'	catch	yes	yes	no	no	no	yes	yes	yes?
stroit'	build	yes	yes	no	no	no	yes	yes	yes?
učit'	teach	yes	yes	no	no	no	yes	yes	yes?

In (48) I provide some examples found with Google that illustrate the less common uses of verbs with *obratno* 'back' (the ones with question marks):

- (48) a. Eto iz kubikov možno stroit' bašni, razvalivat'
 this from blocks possible build towers, ruin
 i tut že stroit' obratno.
 and at once build back
 'It's only possible with building blocks to build towers, ruin them, and build again at once.'
- b. Očividno čto Karla ničego ne čuvstvet i ee
 Evidently that Karla nothing not feels and her
 nado akkuratno učit' obratno doverjat', lubit'
 necessary carefully teach back trust love
 i pročee...
 and etc.
 'It is obvious that Karla does not feel a thing, and one must re-teach her to trust and love, etc.'
- c. Ter'at' obratno ne xoču, čto na-žila trudom, slezami.
 lose back not want what na-lived work_{INSTR}, tears_{INSTR}
 'I don't want to lose again what was acquired with so much effort and tears.'
- d. Iz-za takoj čepuxi prišlosj vse delat' obratno.
 because this nonsense necessary all do back
 'Because of this nonsense, I had to re-do everything.'³

³ The context involved unsuccessful installation of some programs.