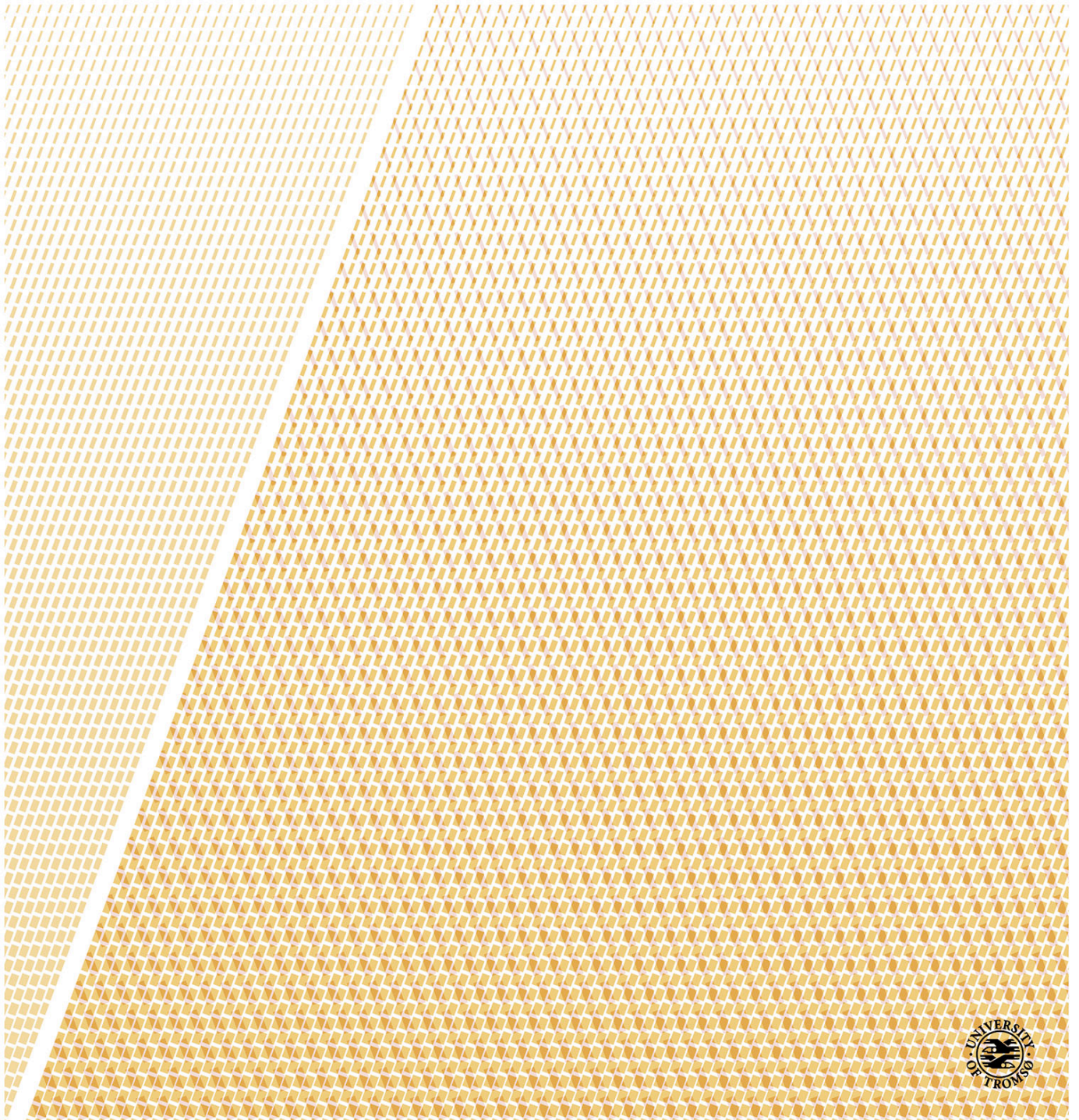


Verbal Prefixes: Selection and Interpretation

Inna Tolskaya

A dissertation for the degree of Philosophiae Doctor – July 2014



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List of Papers

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3. Tolskaya, Inna. 2014. “Polysemy of verbal prefixes in Russian: conceptual structure versus syntax,” submitted to *Journal of Slavic Linguistics*.
4. Tolskaya, Inna. 2014. “Verbal Prexes in Russian with the verbs of motion: Conceptual structure versus syntax” in *Journal of Linguistics*, June 2014, pp. 1 – 31.

0. Abstract

The striking polysemy of Russian verbal prefixes is a well known phenomenon. I show that there is a system to this chaos: prefix meaning is predictable from verbal structure and the prefixation mechanism is similar to that seen in English examples like *outdo* and *overdo*.

In my analysis, lexico-syntactic structure plays an important role in explaining the selection and interpretation of prefixes. I uncover a central meaning that remains constant across different uses of a prefix, and describe the formal structural criteria for prefix interpretation in a given context.

A uniform analysis of prefixation is developed, where a prefix relates an event to a scale measuring path, change, or time. Both change of state and the development of an activity in time mirror a path in space with beginning, duration and a goal. E.g. a heating event can be seen as a journey along the temperature scale from a colder state to a warmer one. The choice of scale that a prefix combines with is a function of the syntactic position of the prefix, determined by the verbal structure.

This approach is also fruitful for English, where I show that the acceptability of prefixation correlates with a scalarity-based classification of verbs.

Verbal Prefixes: Selection and Interpretation

1. Introduction

This dissertation is an article based thesis, consisting of the following chapters:

0. Introduction.

1. *Out-* and *over-* prefixation and scalarity.

2. Russian verbal prefixes: a scalar approach (in *Olomouc Linguistics Conference proceedings*).

3. Polysemy of verbal prefixes in Russian.

4. Prefixes with verbs of motion: conceptual structure vs. syntax (in *Journal of Linguistics*).

The central goal of the thesis is to show how prefixes are selected and to explore the variety of the syntactic configurations in which a prefix may combine with a verb in English and Russian. The two questions central for this work concern selection and interpretation of the prefixes.

Consider, for example, the contrast between the sentences in (1).

- (1) a. He outestimated his closest competitor [google news].
b. He overestimated his closest competitor.

In spite of combining with the same verb, the two prefixes give it completely different interpretations. Both *out-* and *over-* prefixes modify an event specifying its extent as exceeding a certain standard along a scale related to the verb, but in case of *out-* the reference point is provided by another performance of the same event, while in case of *over-* the reference is a functional standard on a scale of change. Thus, (2-a) means that the subject estimated something (e.g. the poll results) more accurately than his competitor did, but it cannot possibly mean that the subject estimated his competitor. In (2-b) it is some property of the competitor being estimated, and the subject chose an overly high value, exceeding the functional standard on the scale that corresponds to the actual

state of affairs.

Both prefixes introduce an unselected object (cf. ‘# to estimate a competitor’), but the role of the object is different, which suggests that the structures, entered by the object in each case, are also different.

Thus, my first suggestion is that structure contributes a part to the prefix interpretation. A verb may combine with a prefix and with the verbal arguments in different configurations, and interpretation depends on configuration. To achieve this, I adopt a neo-constructivist viewpoint where the meaning rests partly on what is brought from the lexicon and partly on the syntactic structure (cf. Borer (2005a) and Ramchand (2008b)). Ramchand’s first phase syntax approach is used, where a verb may contain initiation, process and result projections, each hosting the corresponding thematic arguments. Configurational Theta Assignment (Borer (2005a), Ramchand (2008b)) allows the direct object to receive multiple theta roles, assigned by the prefix and by the verbal projections.

Once we allow structure to contribute to prefix interpretation, the polysemy of Russian verbal prefixes is explained. If we have two sources of meaning, the conceptual entry may remain the same across different instantiations of a single prefixes, while the different structural configurations are then responsible for the structural differences. For example, (2) shows how the same prefix with the same verb can have different meanings in different structural configurations.

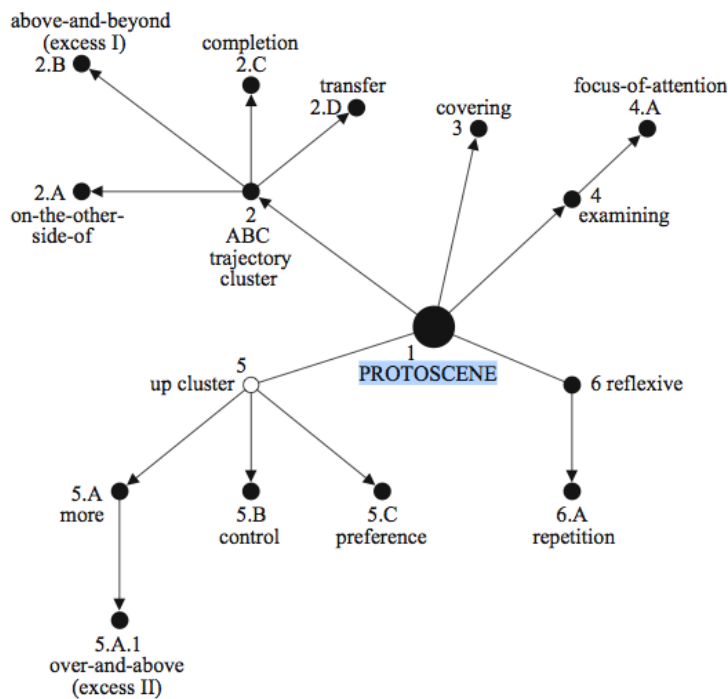
- (2)
- a. Pianist pere-igral ruku
pianist pere-played hand
‘The pianist over-exercised a hand by playing too much’
 - b. Akter pere-igral svoju rolj
actor pere-played his part
‘The actor over-acted his part’
 - c. Geroj pytalsja pere-igratj svoju žiznj
character tried pere-play his life
‘The character tried to re-act his life (repetition)’
 - d. Komanda pere-igrala protivnik-a
team pere-played opponent-ACC
‘The team out-played the opponent’

- e. Rebenok segodnja pere-igral i kaprizničast
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)

(2-d) is similar to (1-a) in involving a competition scenario, while (2-b) and (2-e) are both similar to (1-b) as all denoting some kind of excess. The main difference is that the meanings of Russian prefixes are more diverse, which suggests, as I will argue, that they may enter more functional configurations, while English prefixes are restricted to a specific position. Hence in Russian the same prefix *pere-* may have six different meanings, in addition to the prototypical directional ('motion over ground' as in 'to climb over the fence') meanings. In English, on the other hand, the two meanings corresponding to Russian *pere-* are denoted by different prefixes *out-* and *over-*.

The range of the meanings of the Russian prefix *pere-* is very similar in its polysemy to range of meanings for 'over' described by Tyler and Evans (2003). Thus, the multitude of meanings that a prefix or particle may take is systematic not only across different Russian prefixes, but also cross-linguistically, e.g. when they are compared to English particles (Tyler and Evans, 2003).

- (3) The semantic network for *over*. (Tyler and Evans, 2003)



Thus, the contribution of the structure to prefix interpretation is the first issue raised in this dissertation.

The problem of prefix interpretation goes hand in hand with the problem of various roles of the direct object, which, in its turn, turns out to depend on resultativity. For example, in English *over*-prefixation is only possible with transitive verbs, while *out*-prefixation - only with intransitive. Similarly, in Russian (3-d), corresponding to English *out*-prefixation is based on an intransitive use of the verb ‘to play’ (as in ‘to play football’¹), while (3-b), corresponding to *over*-prefixation is based on a transitive use, as in ‘to play a role’.

As we saw in (2), in many cases the same verb can be used transitively or intransitively. Then the interpretation of the prefix depends on transitivity, e.g. in (4).

- (4) a. v glazu za-ščipa-lo
 in eye.LOC INC-pinch-PAST.3N
 ‘His/her eye started to hurt’ (inceptive)

¹igrati v futbol lit. ‘play in football.ACC’

- b. Gusi za-ščipali tsypjenka.
 geese COMP-pinched chicken-ACC
 'The geese pinched the chicken [to death]' (completive)

In (4-a) the verb is used intransitively and impersonally, denoting an unpleasant sensation in one's eye. The meaning is hence temporal, i.e. inceptive, similarly to the temporal excess meaning of intransitive 'play' in (3-e). When the same verb is used transitively, meaning 'to pinch', the meaning is completive. The direct object (the chicken) is clearly undergoing change in this case. In intransitive use, on the other hand, no change is involved.

In English, similarly, transitivity affects prefix choice and interpretation, though no temporal use of prefixes is available. The verb 'to heat' is normally transitive and sounds more natural with *over-* as in (5-b), as change of temperature of the direct object is usually entailed. Yet, an intransitive use is also available, for example to describe the properties of a heater, i.e. how well it heats. Then no direct object and no change is involved, and in this case *out-* prefixation is available.

- (5) a. My new heater out-heats every other heater I ever tried.
 b. The chemist overheated the solution.

Thus, the second problem is how to account for the connection of prefix choice with transitivity and resultativity. The contrast is derived from the different syntactic positions of the two prefixes, where *over-* maps the process to a scale, while *res-* locates the result state on a scale, as exceeding a contextual functional standard. More generally, if the verb involves a change, the prefix obligatorily measures this change. If no change is involved, the prefix finds other dimensions to measure, provided by structure.

The third problem concerns selection. The combination of verbs with prefixes is a phenomenon both very productive and restricted by a rather complicated set of rules. The restrictions on verb-prefix combination present a problem for the standard view on c-selection, for example as presented in Adger's (2003) textbook, where the head, i.e. the item that projects, also selects its complement according to the uninterpretable features (e.g. a transitive verb such as 'kiss' selects a

noun phrase complement).

Let's start with the superficially simple question: what selects what in the prefix-verb pair? The verb is naturally expected to be the head of the VP, and, as the head, it is the verb that selects a complement, by the definition of headedness. But can we actually find any evidence that it is the verb that selects a prefix? On the contrary, the facts point in the opposite direction.

Verbs do not require a prefix in the same way as a transitive verb requires a complement, as they may appear as an unprefixated imperfective form without any sense of grammatical incompleteness. Most verbs in Russian are compatible with a very large number of prefixes. Many verbs are also flexible with respect to the position occupied by the prefix, i.e. are compatible with both lexical and superlexical prefixes. Furthermore, a lexical prefix may change the argument structure of the verb, and the interaction of a prefix with the verbal object is not expected if the verb selected the prefix. To sum up, the process of combination of verbs with the prefix looks nothing like the combination of, for example, a transitive verb with its nominal complement, so we can hardly say that it is the verb, that selects the prefix.

Can we reverse the argument and say that the prefix selects the verb then? By Adger's definition, it would entail that prefix is the head, which would drastically alter the familiar structure of verb phrase, and raise the question of how this prefix phrase is selected and by what. If the prefix phrase is dominated by the higher verbal structure, then this option reverts to the structure of the verb selecting the prefix. If a prefix is a probe, as prepositions in Kayne (2004), it may merge with the goal verb with the right features. Yet, it seems that it is not the features of the verb, but the structure of the entire verb phrase determining their compatibility, as the properties of the direct object also play a role in acceptability of the prefixation.

A third possibility, which I will argue is a more appealing option, is that there is something else, which both a prefix and a verb interact with, i.e. their cooccurrence arises from a coincidence of their selectional restrictions. I propose that it is not directly the verb that the prefix interacts with, but rather the scale (cf. Kagan's (2013) Scale Hypothesis), lexicalized by the verb or the verbal complement. Since prefix and verb are not sisters, they do not need to select each other, but

require a scale, and may appear together as long as their requirements do not clash.

The possible scalar complements include paths, volume/extent scales, scales of change lexicalized by verbs, and temporal scales. The semantics of a given prefix makes reference to certain scale subparts, the presence of which determines acceptability of the scale. For example ‘over’ makes reference to a functional standard and selects scales of gradual change which provide such a point. ‘Out’ transition just needs a minimum point, and is compatible with lower closed scales (Kennedy and McNally, 2005).

Thus, the basic hypotheses common for the papers included in this thesis are as follows:

1. Each prefix has a single conceptual meaning
2. Structure contributes to prefix interpretation
3. Prefixes take scales as complements (paths, scale of change, temporal)
4. Scales lexicalized by verbs come in different shapes, which determine their compatibility with a given prefix

In spite of the differences between prefixation properties in Russian (where it is the main tool of verbal derivation) and English (where prefixation is only a minor phenomenon), prefixation in both languages has a number of common properties, suggesting that the theoretical apparatus, initially developed for Russian prefixation, can have wider cross linguistic application.

In both languages prefixes may affect the argument structure of the verb they attach to, and resultativity has an effect on prefix selection. Furthermore, I show that in both languages, prefixes interact with a scale and the kind of scale lexicalized by the verb determines whether it may combine with a particular prefix.

2. Context and Content

The meaning that the prefix takes on in a given configuration is not a constant property of the verb or its complement, but a product of the interaction of the verbal lexical entry, its complement,

and context. However, this does not mean that prefixation is entirely free and solely limited by contextual restrictions. For example, no context, however imaginable, could justify a superlexical, temporal, prefix with a directional motion verb, or a combination of a lexical (spatial) prefix with a non-directional verb.

- (6) a. ot-exatj (ot doma)
OT-drive.DIR (from home)
'to drive away (from home)'; '*to stop driving'
- b. ot-ezditj
OT-drive.non-dir
'to stop driving'; '*to drive away'

Similarly, it is hard to imagine a context that could make examples in (7) fully acceptable. The oddness of these sentences cannot be derived from the oddness of the relevant scenario.

- (7) a. *Romans over-destroyed Carthage.
- b. ??Kim outdestroyed the experienced wrecking crew. (Beavers and Koontz-Garboden, 2012)

Thus, some formal structural restrictions must describe the selection of the scale by the prefix, the origin of such scale in the structure, and the site of attachment of the prefix. I suggest a prefix phrase is the complement of an eventive head. According to Ramchand's 2008b event decomposition, a verb may be maximally decomposed to three heads: initiation, process, and result. Hence, there are several subevents that may potentially take the PP complement.

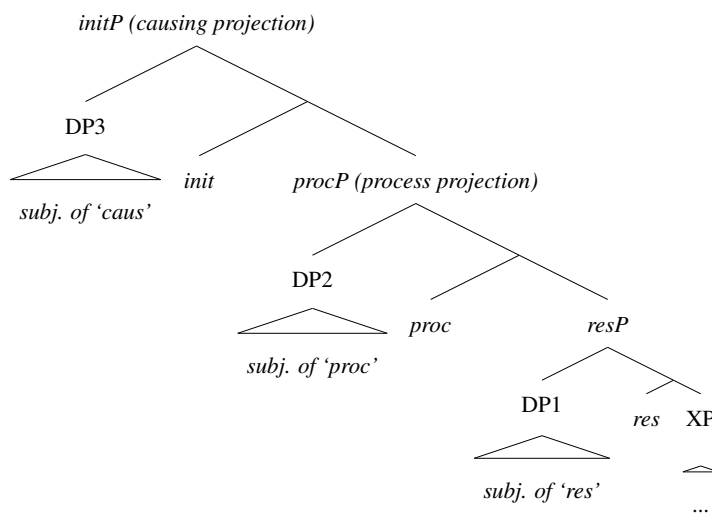
Once a prefix has multiple subevents to interact with, the difference of interpretation follows. If the prefix interacts with the result subevent, it locates the result state on a scale of change. E.g. when *over-* combines with *heat*, the prefix maps the result state (how much the direct object is heated) on the temperature scale, as exceeding the desired temperature. When there is no change of state involved, and no result, a prefix must interact with the an available scale providing head. Then it measures the extent of process along a contextually relevant scale. For example, when

out- combines with a result-less *dance*, no change of state is involved, but the extent (length or quality) of the process is located on the scale corresponding to the extent of another performance of the event. In Russian, a prefix may furthermore combine with the Aspect head, in which case the prefix is superlexical and interacts with a temporal scale.

This is possible in the framework of event decomposition in First Phase Syntax, suggested by Ramchand (2008b). In First Phase Syntax an event may be maximally decomposed into initiation, process and result. The subevents are linked by Principle of Event Composition, where initiation leads to process, which, in turn, may lead to a result.

- (8) 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).

Each subevent heads its own projection with a separate specifier.



Thus, the three core projections suggested by Ramchand (2008b, 48) are:

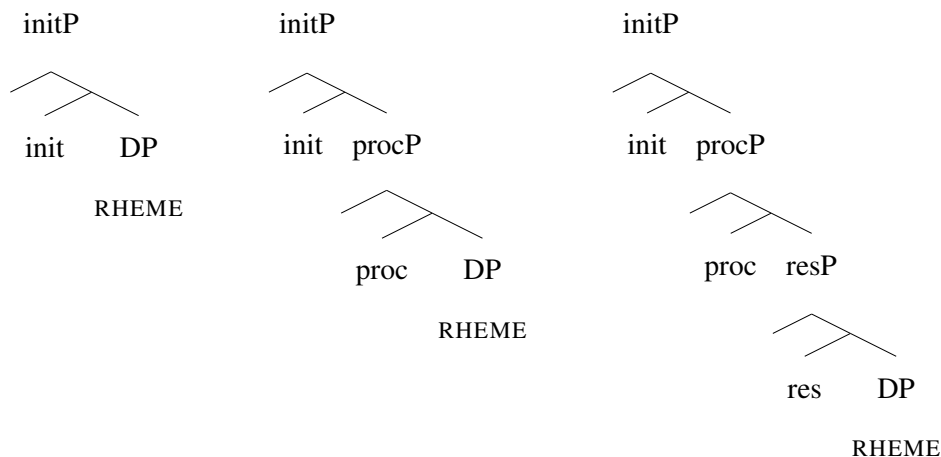
- *initP* introduces the causation event and licenses the external argument ('subject' of cause = INITIATOR)
- *procP* specifies the nature of the change or process and licenses the entity undergoing change

or process ('subject' of process = UNDERGOER)

- *resP* gives the 'telos' or 'result state' of the event and licenses the entity that comes to hold the result state ('subject' of result = RESULTEE) (Ramchand, 2008b, 48)

Each subeventual head enters into a predicational relation with the specifier position. *Proc* and *res* can take a PP, headed by the prefix, as a complement. Then the specifier of the subevent (undergoer or resultee) is also the specifier of the PP, changing along the scale introduced by the prefix.

The subeventual complements are called RHEMES by Ramchand (2008b). A RHEME is defined as the true internal argument that acts as a further modifier or description of the *proc* event, with which it combines by event identification.



A process RHEME must denote something that has a scalar structure then can be mapped to the process subevent in a systematic way. As the locus of scales, with which prefixes combine, RHEMES are a crucial topic in this thesis. The restrictions on prefixation follow to a vast degree from restrictions on RHEMES. A crucial restriction that makes mapping to the RHEME possible is *Event-Rheme Homomorphism*, defined as follows:

(9) *Homomorphism:*

An isomorphism between two systems is a one-one correspondence between their elements and a one-one correspondence between their operations and relations which satisfies the

following conditions:

1. If a relation R holds between two elements of A, the corresponding relation R' holds between the corresponding elements of B; if R does not hold between two elements of A, R' does not hold between the corresponding elements of B.

2. Whenever corresponding operations are performed on corresponding elements, the results are corresponding elements.

3. Homomorphism is a correspondence with all the properties of an isomorphism except that the mapping from A to B may be many-to-one; the set B may be smaller than the set A.

(Partee et al., 1990)

It follows that *Initiation* and *Result*, which are states, can only combine with a state or place. *Initiation* is the state leading into the process, and, when alone, denotes a static event, thus its RHEME is place or a state, as in (10).

(10) The cat is **on a mat / happy**

As this thesis only deals with dynamic processes, the possible cases of prefixation in the *init* projection remain outside the scope of the dissertation and *Initiation* projection will not receive much further attention. The *Result* projection, on the other hand, will be extremely relevant. As *res* is also a state, the RHEME is also a state or a place. But, since it is the result of a dynamic event, the RHEME is the location or the state, in which the resultee is found as a result of the event, e.g. in (11).

- (11) a. Karena entered **the room**
 b. Karena shattered the vase **to pieces**

The process is dynamic and has multiple subparts, so it can be mapped to a scale or path, e.g.

- (12) a. Karena jogged **two miles / to the store**
b. Karena drank **a bottle of wine**.
c. Karena heated the solution **five degrees**.

Thus, a prefix is a function from scale to an oriented ‘path’ to which the event can be homomorphically mapped. If it is in result complement, the result is mapped to the final point of the path, while if the PP is a process Rheme, a complex path (with subparts) must be created.

In this case *Monotonicity* ensures that the relation between the two domains (process and scale) preserves the ordering from one domain to the other (Schwarzschild 2006).

Schwarzschild (2006) example of monotonicity:

- (13) “Sometimes a dimension reflects the part-whole structure of the domain of objects it applies to and sometimes not. If you have a pile of cherries, it has a certain weight. Take some of the cherries away, the weight goes down; add some cherries to the pile and the weight goes up. By contrast, you can add cherries without changing their temperature, their weight per unit, or their color.”

The notion of monotonicity is as relevant for events, whose parts can be ordered by duration, just like parts of objects can be ordered by weight and by volume. If a given portion has a certain volume, any proper part of that portion has less volume. Similarly, the measure phrase in an expression like ‘two hours of walking’ characterizes duration. “When we speak of walking, duration is monotonic on the part-whole relation, as required by the partitive. Any proper part of that walking would have had a shorter duration.”

Then it comes as no surprise that a monotonic mapping is possible between a gradable event and a gradable property. For example, if one eats a pile of cherries, the more the eating event goes on, the more cherries are consumed.

Similarly, the more a directed motion event (e.g. ‘run’) goes on, the more is the displacement along the path, and the more a change of state event (e.g. ‘heat’) goes on, the greater is the resulting change.

The prefix provides the orientation of the scale, and the part of the scale to which the event is mapped remains constant across the different uses. What sort of subevent (process or result) is mapped is determined by the verbal structure. The sort of values constituting the scale, however, is contextual - depending on what property of the event is contextually relevant and involves a scale change.

3. Polysemy

As shown in (2), the polysemy of Russian verbal prefixes is quite striking. However, there is a correlation between the prefix meaning and its syntactic position. Thus, if we accept that prefixes may attach at different positions, and that structure can make a contribution to meaning, along with the lexical entry, polysemy is predictable. A single lexical entry per prefix may be preserved, if the prefix serves only to relate the event to a scale, but the scale variety is responsible for the differences.

Thus the conceptual meaning remains constant in all instantiations of the prefix, while the syntactic structure provide the difference. This dual source of meaning creates a structure that is systematic, predictable and possible to acquire.

In table 1 I illustrate how the meaning 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), 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: an event may exceed the width of a boundary in space, the dimensions of the direct object, a scale, lexicalized by the verb, or a temporal scale. Thus, in the table below, the

Table 1: Prefix position and interpretation

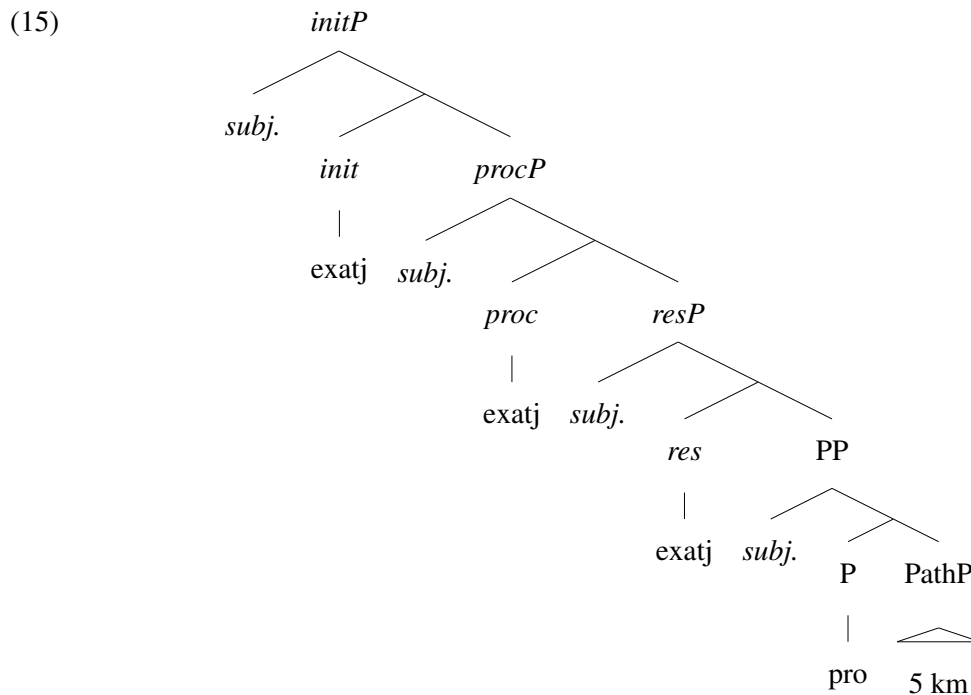
	pere- 'exceeding'	pro- 'through'	do- 'up to'	ot- 'off' (+ -)	za- 'into' (- +)
I. R(e; ground)	pere-bežatj run across	pro-bežatj run through	do-bežatj run up to	ot-bežatj run away	za-bežatj run into
II. R(e, scale)	pere-varitj over-cook	pro-varitj cook through	do-varitj complete cooking	ot-varitj cook completely	za-varitj brew (tea)
III. R(e, time)	pere-plavatj over-swim	pro-plavatj swim for a time	do-plavatj complete swimming	ot-plavatj stop swimming	za-plavatj start swimming

relationship, specified by the prefix, remains constant in each of the structural configurations (the vertical dimension), and the argument structure of the relationship remains constant for each prefix inserted into the configuration (horizontally):

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, readiness) is specified by syntax. *Za-* refers to entering a certain location, state or activity, while *ot-* is the reverse transition, out of it.

A path is a prototypical scale, so the combination of Russian directional motion verbs with spatial use of prefixes is a convenient ground to demonstrate the prototypical scenario, on which the rest of the discussion is based.

- (14) pro-exatj pjatj kilometrov
 PRO-drive.INF^{PF} 5 km



The prefixP is the RHEME complement of the event head corresponding to the result state of driving. The prefix combines with the scaleP ‘five kilometres’, ensuring that the result state is mapped to the end of the directed path covering 5 kilometres. The prefix provides orientation to the path, giving the contrast between route (15), source (16-b) and goal (16-a) paths.

- (16) a. za-jti v dom
 za-walk in house.ACC
 ‘to walk into the hose’
- b. oto-jti ot doma
 ot-walk from house.GEN
 ‘To walk away from the house’

In (16-a) the path is oriented to the house, and the result state is mapped to the location ‘at the house’, at the end of the path. In (16-b) the path is oriented away from the house, so the result state is mapped to the location **not** at the house. In (15) the result state is mapped to having traveled every subpart of the path (five kilometres) from beginning to end.

Thus, a prefix establishes the mapping to the relevant subparts of the scale, i.e. creates an

oriented path based on the scale provided. I use Zwarts' (2005) algebra of paths to formalise the orientation.

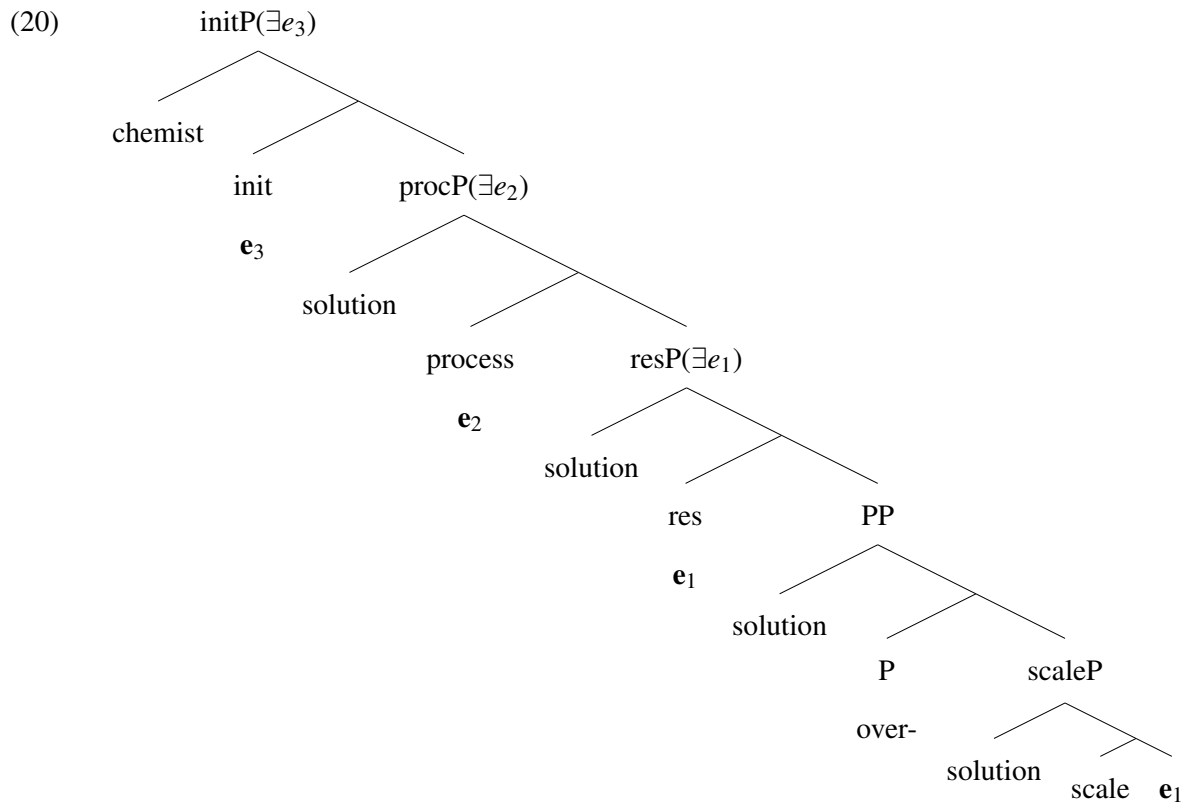
		'at'	'in'	'on'	transition
(17)	source p(0)	from	out of	off	+ –
	goal p(1)	to	into	onto	– +
	route p(<i>i</i>)	via, through	through	over	– + –

Russian prefixes are classifiable in a parallel fashion to English prepositions:

		'at'	'in'	'on'	transition
(18)	source p(0)	ot-	iz-	s-	+ –
	goal p(1)	pod-	za-, v-	za-, na-	– +
	route p(<i>i</i>)	pro-	pro-	pere-	– + –

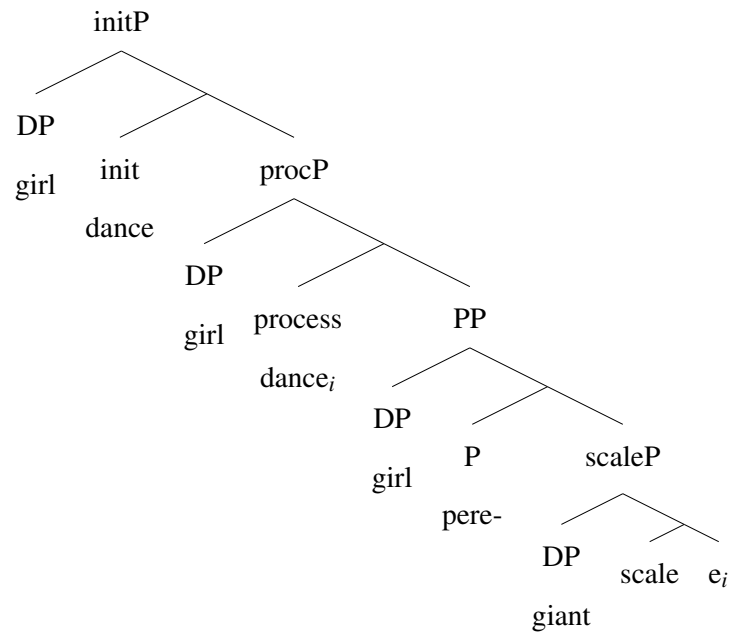
I suggest that this classification is applicable not solely to spatial paths, but to any scale of change in general. So the structure of a verb of scalar change is actually very similar to that of a motion verb, except that the path is not overt. Thus the structure below corresponds to (19), and is the same for the English sentence.

- (19) Ximik pere-grel rastvor
 chemist over-heated solution.ACC
 'The chemist over-heated the solution'



The prefix *pere-* may attach to *proc* head, just like English *out-*:

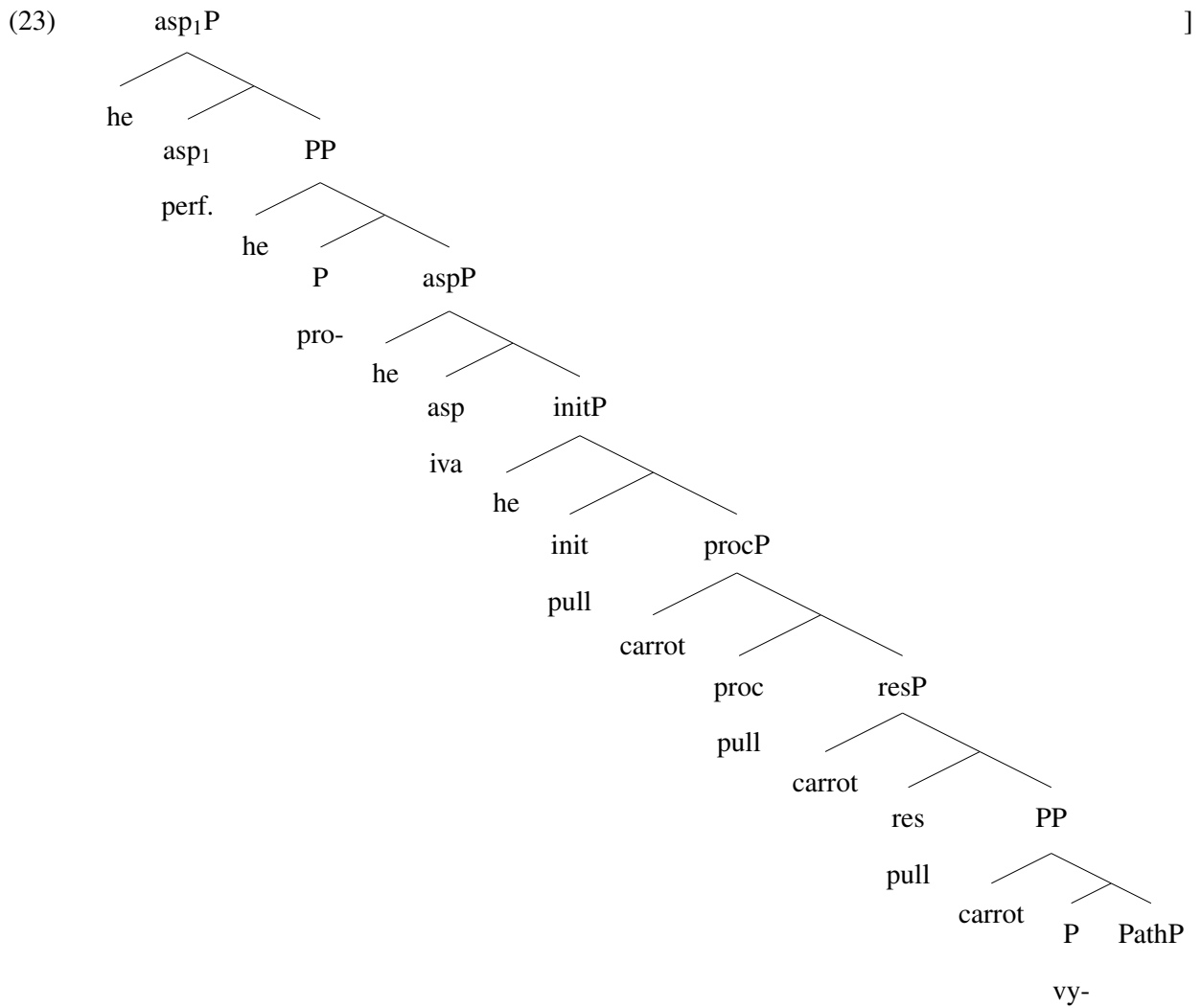
- (21) *devočka pere-tancevala velikana*
 girl over-danced giant
 'The girl outdanced the giant.'



Furthermore, in Russian Asp head is a possible locus of prefixation. There is evidence for two aspect heads in Russian, one corresponding to secondary imperfective, which can make an imperfective verb perfective, and the other can make the secondary imperfective verb perfective again, if a superlexical prefix is added.

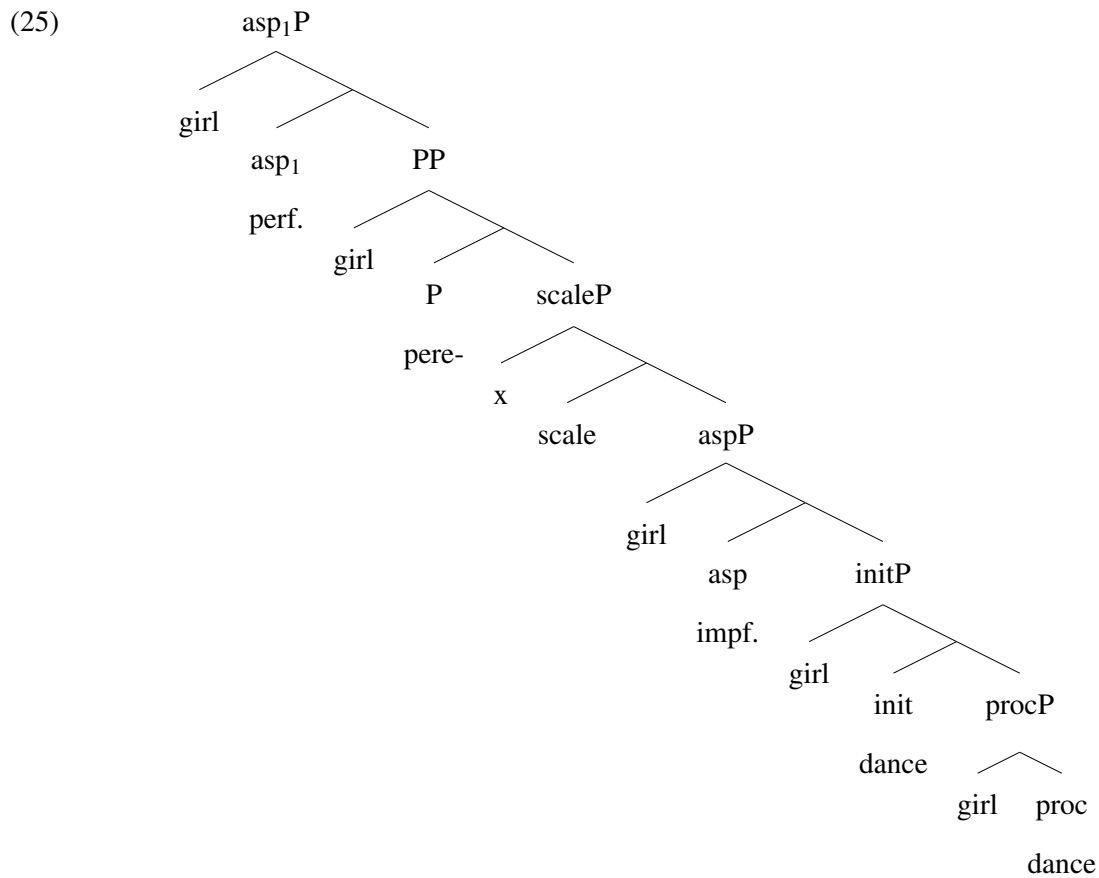
- (22) On pro-vy-derg-iva-l morkovk-u poldnja.
 he PRO-VY-pull-2IMPF-PAST carrot-ACC half.day
 'He spent half a day pulling out carrots'

(Beliakov (1997))



Thus, I suggest that even in examples without secondary imperatives, both of these heads are present.

- (24) *devočka pere-tancevala*
 girl over-danced
 'The girl danced too long.'



Similarly to the previous examples, the PP headed by the prefix here is a complement to an eventive head, and has a scalar complement. The scale head in this case has the entire event as its complement, as opposed to an event variable, and creates a temporal scale based on the event.

4. Scale of change

While compatibility of a verb with a prefix depends on the verbal structure, which determines which subevents may be modified with prefixes, the scale type plays an important role in prefix selection.

Both scales and paths can be classified according to their shapes, as they can be open or bound on one or both ends. Thus, the scale typology in (26), suggested by Kennedy and McNally (2005), closely mirrors the path typology suggested by Zwarts (2005).

- (26)
1. $\langle D_{(0,1)}, R, \Delta \rangle$ (TOTALLY) OPEN SCALE (#slightly, #perfectly, #almost tall)
 2. $\langle D_{[0,1)}, R, \Delta \rangle$ LOWER CLOSED SCALE (slightly, #perfectly, #almost dirty)
 3. $\langle D_{(0,1]}, R, \Delta \rangle$ UPPER CLOSED SCALE (#slightly, perfectly, almost clean)
 4. $\langle D_{[0,1]}, R, \Delta \rangle$ (TOTALLY) CLOSED SCALE (slightly, perfectly, almost, full)

Evidence for this typology comes from the distribution of degree modifiers such as ‘slightly’ and ‘perfectly’, which pick up the minimum and maximum degree on the scale. Thus, lower closed scale adjectives, such as ‘dirty’, pick out a minimum on the scale, e.g. if the object is minimally dirty it is true that it is dirty. The upper closed scale adjectives, such as ‘clean’, pick out the maximum point on the scale, so the statement that something is clean is only true if the maximum cleanness for that object is reached.

A goal preposition maps an event to the goal path in such a way that the relationship holds between the final subevent ($e(1)$) and the final point of the path ($p(1)$). E.g. the final subevent of the event ‘walk to the store’, at time 1 (where the event starts at time 0 and ends at time 1), is mapped to the final point of the path, $p(1)$. Then the transition occurs from not being at the goal location (marked by minuses) to being at that location (marked by plusses). This contrasts with source prepositions, where the initial subevent $e(1)$ is mapped to the beginning of the path $p(0)$, and the transition is to not being there.

For the mapping to take place correctly, the path must have the subparts (beginning or end) to which the prefix definition makes reference. The same requirement holds for scales, which, as demonstrated in (26) come in different shapes. A source path is a sub case of a lower closed scale, as both have a minimum point, to which the initial subevent can be mapped, but both are open on the other end. A goal path is a subclass of an upper closed scale, as both have a maximal point.

A prefix maps an event to the scale / path, ensuring correct path orientation. A source prefix maps the result state to a location outside the source, for which it needs a well defined source. For example, a goal prefix, such as *za-* must combine with a goal path (cite paper 4). In (27-a) ‘to the house’ is the goal of the path, so the prefix maps the result state to the location ‘at the house’ which

corresponds to the pluses in Zwarts' (2005) definition of goal path as a minus-to-plus transition. The source path 'from the house' does not provide a goal, so when the prefix tries to map the result state to the goal location (corresponding to pluses), it does not find one, and the function is uninterpretable.

- (27) a. za-jti v dom
 za-walk in house.ACC
 'to walk into the house'
- b. *za-jti ot doma
 za-walk from house.GEN

The goal path is a sub case of an upper closed scale, and, as such, sounds better with adverbs similar to 'perfectly', 'completely' and 'almost', than with such adverbs as 'slightly' and 'a little'.

- (28) a. za-leztj sovsem /počti na veršin-u gor-y
 za-climb completely almost on top-ACC mountain-GEN
 'to climb completely /almost to the top of the mountain'
- b. *slegka /čutj-čutj za-leztj na veršin-u gor-y
 slightly a-little za-climb on top-ACC mountain-GEN
 '*to climb slightly / a little to the top of the mountain.'

Just like a path must contain a goal to combine with a goal prefix, a scale of change must provide a goal state, i.e. it must be an upper closed scale, in order to combine with a goal prefix. For example, the verb 'to warm' lexicalizes a lower closed scale, where the undesirable 'source state' is a certain temperature lower than comfortable. The prefix ensures a plus to minus transition, so the result state is mapped to a 'non-cold temperature'. There is no well defined goal state, and the verb cannot mean 'to warm up' with a goal prefix. It combines with source prefixes, resulting in a meaning 'to warm up' with an implication that the object was very cold, probably frozen, to start out with.

- (29) a. *za-gretj za-merzshie ruki
 za-warm za-freeze-PP hands

- b. oto-gretj za-merzshie ruki
 ot-warm za-freeze-PP hands
 'to warm frozen hands'

The frozen state, as opposed to warm, is treated as a well defined bound state, because the object is in a visibly different state, and thus prefers a goal prefix. Thus a goal prefix, denoting a minus to plus transition (i.e. a transition from non-frozen to a frozen state) is preferred.

- (30) a. za-morozitj mjaso
 za-freeze meat
 'to freeze the meat'
- b. *ot-morozitj mjaso
 ot-freeze meat

Similarly, the source prefix *ot* 'from' may combine with a source path, where the result location is mapped to a place 'not near the fire'. The source can also be context defined as location at the reference time, as in (31-b), where the addressee is required to move to any location which is not the location at the time of speech. Path omission sounds best in imperatives, as the source is then very salient.

- (31) a. ot-skočitj to ognja
 ot-jump from fire.
 'to jump away from the fire'
- b. oto-jdi!
 it-walk.IMP
 'Go away! (= Move out of the way!)

A source path is a subcase of a lower closed scale, as the initial state/location is well defined, and the result is defined negatively, mapped to a non-source state / location. As lower closed scale verbs, the verbs prefixed with a source prefix sound better with such adverbs as 'slightly' than with such adverbs as 'completely'.

- (32) a. slegka oto-dvintjsja ot ognja
 slightly ot-move from fire

‘to move slightly away from the fire’

- b. oto-dvinutjsja *sovsem /*počti ot ognja
 ot-move completely almost from fire
 ‘to move away completely/ almost from the fire’.

If the complement is an abstract scale, rather than a path, the source prefix still needs a source, i.e. a well defined initial state. Thus, it combines with verbs lexicalizing a lower closed scale, such as ‘warm’ in (29), and does not combine with upper closed scales such as lexicalized by the verb ‘to freeze’ in (30).

In English, though prefixes do not combine with paths, and are not as versatile as in Russian, a similar effect can be observed, as demonstrated in paper 1. The verbs in (33) ‘to heat’ and ‘to bend’ lexicalize lower closed scales, and are hence compatible with the source prefix ‘out-’.

- (33) a. The rage that I am filled with right now could **outheat** a thousand blue supergiant stars.
 b. As Robot Bender waits for the robot bending competition to begin at the Olympics he is confident that he could **out-bend** his competitors.

Prefixation with upper-closed scale verbs (‘out-freeze’ and ‘out-straighten’) does not yield fully grammatical sentences. Even if a straightening competition can be envisaged, ‘out-straightening’ in this case will mean ‘to straighten more objects’, rather than ‘to straighten straighter’. Thus, when the scale lexicalized by the verb is unavailable, alternative scales, such as quantity, or time duration, can be evoked.

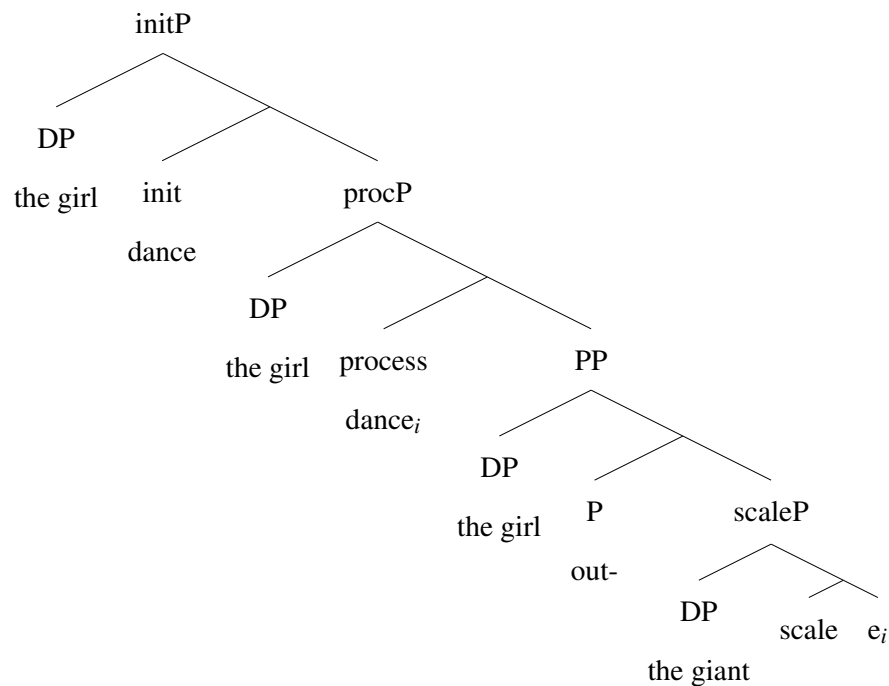
A similar contrast is observable for ‘over-’ as in (34), where the lower closed scale verb ‘to open’ is grammatical with ‘over-’ prefixation, while the upper closed scale verb ‘to close’ is not.

- (34) a. Don’t overopen your eyes when posing for photos! (google)
 b. *Don’t overclose your eyes!

The structure of an ‘out-’ prefixed verb is similar to the structure of a prefixed directional verb,

as the prefix phrase also appears in the complement of an eventive head and takes a path as a complement. The difference is that the eventive head above ‘out-’ is the process, and the path phrase contains an abstract scale and a direct object.

(35) The girl outdanced the giant.



Formally, the scale phrase simply creates a scale related to the individual in the specifier. The scaleP with the DP ‘giant’ in the specifier yields the subpart of the scale corresponding to the giant’s performance, which acts as the ground for the P head. The P head creates a directed path oriented ‘out’ of the range corresponding to the giant’s performance. The process event is mapped to the path in the PP.

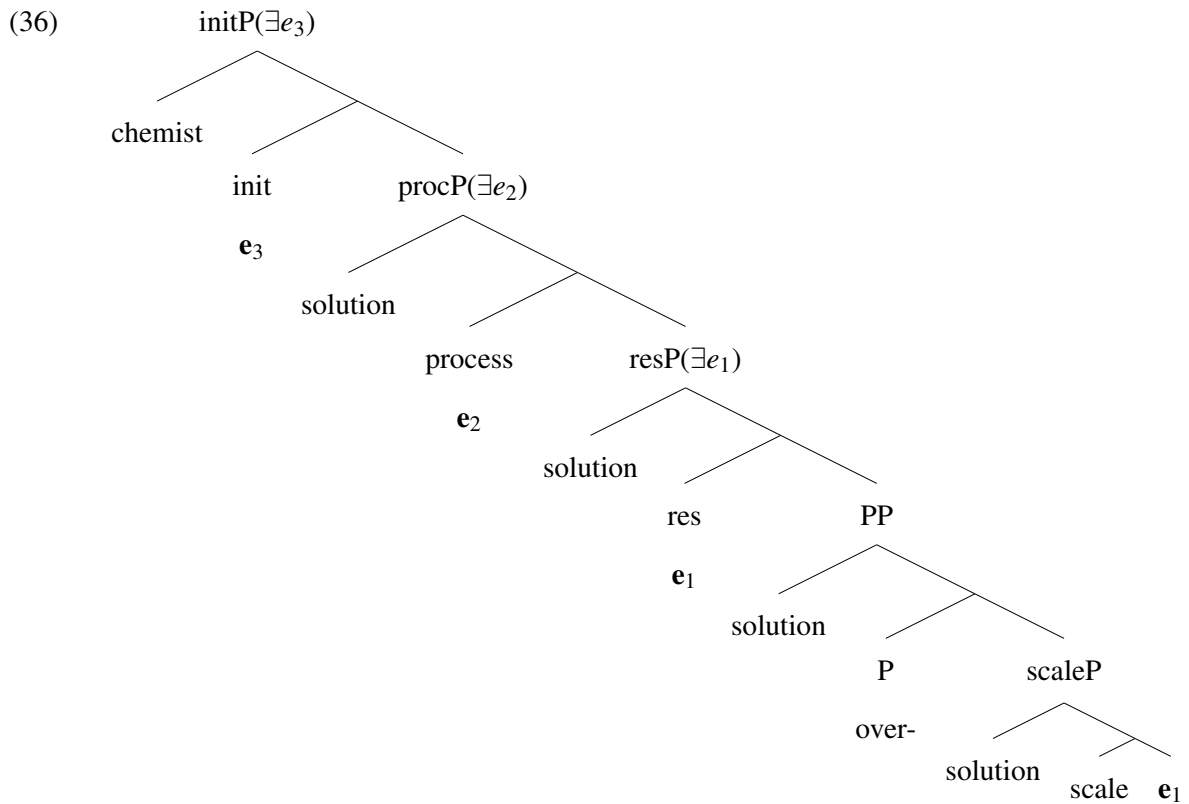
The scale head takes an event variable as a complement and is a function that creates a scale, i.e. a set of values, related to the event. E.g. if the event is ‘dance’, a scale can be a set of dance lengths, or a set of possible scores at a dancing competition. If the event is a consumption verb such as ‘eat’ or ‘drink’, the scale is a set of volumes consumed, with creation verbs the scale is based on amount created.

This scale combines with the P head containing the prefix 'out-'. The scale variable is existentially closed at this point, and the P head yields a path variable. The specifier of the pathP, the girl, is the figure moving along the path, away from the ground. In this case, where the path is a directed scale of change, no literal movement in space is present. Yet, the relationship between figure and ground is very similar, since the figure obtains the values constituting the path, in the order in which they are ordered. When this oriented path combines with the process, a homomorphic relationship is established, where every subpart of the process is mapped to the corresponding subpart of the scale.

The figure of the PP, the girl, is also the specifier of the *procP*, and of the *initP*, as the subject of an intransitive verb like 'to dance' is both the initiator and the undergoer of the event.

The event variable is existentially closed at the *procP* level (pathP can only existentially close the scale variable, as it is not an eventive phrase), which ensures that the process and the event characterised by the scale are the same event.

While the process is mapped to the entire scale by homomorphism, the result state is mapped to a point on the scale. This is the case, for example, with 'over-' prefixation, shown in (36), and with all the lexical prefixes in Russian (as I will discuss later).



Again, an event variable, is the complement of the scale head, characterising it. As the process closing the event variable is the heating process, the scale characterising it is a temperature scale. In this case the solution is undergoing change and its desired temperature is the reference point.

The solution is also the specifier of the PP, as it consecutively obtains the temperatures constituting the path. The PP is the complement of the resP, so the result is mapped to the end of the path, by homomorphism, i.e. to a state beyond the intended temperature.

The solution is also the resultee and the undergoer of the event, as it is both the holder of the resulting overheated state, and it is undergoing change by the heating process.

The event variable in the complement of the scale is, in this case, existentially closed at the resP, so the scale characterising it consists of possible results of heating, i.e. temperatures.

Because in ‘out-dance’ the event variable is closed by the process, while in ‘over-heat’ the variable is closed by the result, the different roles of the direct object follow. The specifier of a result event is the resultee, so the object of over-prefixation is undergoing change. *out-*, on the other

hand, combines only with intransitive verbs, where the specifier of the process is also the initiator, i.e. is the subject. Hence, the specifier of the scale characterising the process, gets a subject role (i.e. the giant in ‘the girl out-danced the giant’ is also dancing and not undergoing change).

5. Prefixes: event denoting or event modifying?

A process head can have two types of complements: a resP, or a Rheme. A resP introduces a new subevent and the two subevents are related by a causation relationship, while a Rheme modifies the existent event and combines by event identification. A prefix can be argued to combine with the process in either configuration: either introducing a new subevent, or as modifying an existing subevent.

Thus, two orthogonal approaches are possible to the role of a prefix. One way is to view a prefix as introducing an entirely new event, where, for example a lexical prefix adds a new result subevent to a process event. This approach is adopted in Paper 4, following Ramchand (2008b), and allows a straightforward explanation of the time-space parallel and of compatibility of the prefixed verb with directional PPs.

A second approach, adopted in my subsequent works (chapters 1 - 3), is that a prefix is a Rheme complement of an event head, rather than introducing its own subevent. The idea that a prefix measures out an event, rather than introducing a new one goes back to Borer’s (2005b) double heads, though departs from her analysis in suggesting that a prefix heads its own phrase with its own specifier. Since not all prefixed verbs have a result projection (e.g. ‘out-prefixation’ in chapter 1), an approach where no separate subevent is introduced by the prefix allows for a uniform analysis.

Such an analysis is compatible with the findings in chapter 4. An alternative explanation of the source goal asymmetry is possible in terms of scale classification. A goal prefix is incompatible with a source PP (37-a) because it requires a goal (i.e. a maximum point) on the scale to be interpretable. However, a source prefix is compatible with a source or a goal PP (37-b), because such a path may have a contextual default starting point at the place of the utterance, i.e. the default

source path is ‘from here’. No default goal is available, so source PPs are not compatible with goal prefixes.

- (37) a. My za-šli v dom /*iz doma.
 we INTO-went in house.ACC /out house.GEN
 ‘We went into the house(/out of the house)’
- b. My oto-šli ot doma /k domu /v tenj.
 we FROM-went from house.ACC /to house.GEN /in shade.
 ‘We went away from the house(/to the house)’

Similarly, it follows that a route prefix, which needs both a minimum and a maximum point (38-a), is compatible with goal paths (38-b), which have a default source, but not with source paths (38-c) which provide no goal.

- (38) a. Mnogie pere-bežali iz odnogo lagerja v drugoj.
 many PERE-ran from one camp to other
 ‘Many fled from one side to the other.’
- b. Belka pere-bežala dorogu.
 squirrel PERE-ran road
 ‘A squirrel ran across the road’
- c. Ona pere-bežala v kabinet muža.
 she PERE-ran in office husband.GEN
 ‘She ran across into her husband’s office.’
- d. *Ona pere-bežala iz kabineta
 she PERE-ran from office.GEN
 (‘She ran across from the office’)

(38-a) is acceptable because the path is overtly bound on both ends. In (38-b) the dimensions of the road provide the bound path (similarly to the desired temperature of the solution in ‘the chemist over-heated the solution’. In (38-c) the source is contextually determined initial location of the subject, while goal provides the other bound. In (38-c) no goal is provided, hence ungrammaticality.

6. Lexical and superlexical prefixes

It has been widely recognized that verbal prefixes in Slavic languages form a heterogeneous class as to their semantic and syntactic properties, falling into at least two types, lexical prefixes and superlexical prefixes, or internal and external. For Russian, this distinction was established and extensively motivated in Isačenko (1960), Romanova (2004b), Svenonius (2004), Babko-Malaya (1999), Schoorlemmer (1995), Ramchand (2004), Zaucer (2009), Di Sciullo and Slabakova (2005).

Lexical prefixes, as potential argument-structure modifiers, are generated in a position inside VP. Superlexical prefixes modify the event itself and do not change argument structure or the core meaning of the base verb and are therefore syntactically higher, above aspect head (Pereltsvaig, 2006). According to Romanova (2004b), the lexical prefixes attach mostly to perfective or telic stems (if the verb is supplied with the option), allow the verb to form secondary imperfectives, cannot stack, do not measure over objects, and can change the argument structure of the verb. This behavior corresponds to a low prefix position inside VP (*pere-* in (3a), *vy-* in (3b), *nad-* in (3c)).

Superlexical prefixes attach to imperfective or atelic stems, do not allow the verb to form secondary imperfectives, can stack, can measure over events or objects, do not change the argument structure of the verb. The examples below illustrate the superlexical prefixes (*ot-*, *pro-*, *po-*) stacking over the lexical prefixes:

- (39) a. *Ot-pere-biral ty bumagi. ...Uvoljnajut tebj.*
COMPL-ACROSS-take¹ you papers-ACC. ...Fire-3PL you-ACC
'You are done with sorting papers. They are firing you'
- b. *Pro-vy-dergival morkovk-u poldnja.*
DUR-OUT-pull¹ carrot-ACC half.day
'He spent half a day pulling out carrots'
- ((3a,b) are adopted from Beliaikov (1997))
- c. *A čto ne sjem, to po-nad-kušu!*
and what not eat that DISTR-SLIGHT-bite
'And whatever I cannot eat, I will bite slightly one by one'

In (39-a) and (39-b) the first, superlexical prefix, attached to the prefixed imperfective stem, refers

Prefix	Meaning	Example	Babko-Malaya 1999	Svenonius 2004	Ramchand 2004	Romanova 2006
<i>Za-</i>	inceptive	<i>za-petj</i> ‘start singing’	+	+	+	+
<i>Po-</i>	delimitative	<i>po-guljatj</i> ‘walk for a while’	+	+	+	+
<i>Na-</i>	cumulative	<i>na-bratj</i> ‘take a lot’	–	+	–	+
<i>Pere-</i>	distributive	<i>pere-lovitj</i> ‘catch one by one’	–	+	–	+
<i>Ot-</i>	terminative	<i>ot-rabotaj</i> ‘finish working’	–	+	–	+
<i>Pro-</i>	perdurative	<i>pro-sidetj</i> ‘sit for a long time’	+	–	–	–
<i>Iz-</i>	completive	<i>iz-ranitj</i> ‘wound all over’	–	+	–	–
<i>Do-</i>	terminative	<i>do-pisatj</i> ‘complete writing’	–	–	–	+
<i>Po-</i>	distributive	<i>po-brosatj</i> ‘throw one by one’	–	–	–	+
<i>Pri-</i>	attenuative	<i>pri-otkrytj</i> ‘open slightly’	–	–	–	+
<i>Pod-</i>	attenuative	<i>pod-zabytj</i> ‘forget slightly’	–	–	–	+

Table 4: Inventories of SLPs

to the time of the event, without affecting the meaning of the main verb. *Ot-* in (39-a) refers to the permanent completion of the event, while *pro-* in (39-b) refers to duration. *Po-* in (39-c) is an example of the distributive reading. The lexical prefixes are closer to the root and change the lexical meaning of the verbal stem, rather than simply modifying the time. Crucially, the same prefix may act both as lexical and superlexical, with interpretations different enough to provoke a suspicion of homophony. E.g. the superlexical prefixes in (39) (*ot-*, *pro-*) may act as lexical prefixes with the same verbs, when adjacent to the root:

- (40) a. *ot-bira-tj bumagi*
 AWAY-take-INF papers-ACC
 ‘to take away (from smb., by force) / to select the papers’
- b. *pro-dergiva-tj nitku v igolku*
 THROUGH-pull-INF thread-ACC in needle-ACC
 ‘to pull the thread through the needle’

However, the inventories of superlexical prefixes identified by different authors may be slightly different, as (not exhaustively) shown in Table 4 by Tatevosov (2008).

The fact that the same prefix can be used as lexical and superlexical with the same verb is often

a source of confusion in determining the site of attachment of the prefix, especially for prefixes where meaning of lexical and superlexical instantiations are relatively close, as in the case of *do-*. The completive prefix *do-* can refer to reaching the final point of the event, or of the scale, which tend to coincide. Thus, the lexical and superlexical uses become harder to tease apart and syntactic properties, rather than meaning, must be used as primary base for classification of each case.

Romanova (2004a) suggests the following criteria for distinguishing lexical and superlexical prefixes:

	Lexical	Superlexical
secondary imperfectivization	yes <i>ot-prygnutj</i> OT-jump <i>ot-pryg-iva-tj</i> OT-jump-IMP-INF	no <i>ot-plavatj</i> OT-swim <i>*ot-plav-yva-tj</i> OT-swim-IMP-INF # <i>ot-plyv-atj</i>
stacking	no	yes <i>pro-vy-dergivatj</i> <i>PRO-VY-pull</i> 'spend time pulling out'
change the argument structure of the verb	yes <i>*spatj ekzamen</i> 'sleep exam' <i>pro-spatj ekzamen</i> 'sleep through exam'	no

Table 5: Properties of lexical and superlexical prefixes

Only lexical prefixes allow secondary imperfectivization, where the imperfective suffix *-iva-* makes an imperfective out of a prefixed perfective stem. Superlexical prefixes can stack above lexical, but not vice versa, and lexical prefixes may sometimes change the argument structure of

the verb.

Tatevosov (2008) additionally uses the possibility of nominalization and compositionality of meaning as distinguishing criteria. Once we apply the criteria listed, we see that some of the examples of the prefix uses in table 4 are actually lexical uses (*za-petj* ‘start singing’, *do-pisatj* ‘complete writing’).

In table 6 I apply the diagnostics from Romanova (2004) and Tatevosov (2008) to the prefixes in table 4. In cases where the prefix can be used superlexically but is given in a lexical use, I substituted the examples. If I only found several examples I provide the number of examples instead for a + that denotes more general acceptability.

Prefix	Meaning	Example	Secondary Imperfective	Compositional Meaning	Stacking	Nominalization
<i>Za-</i>	inceptive	<i>za-prygatj</i> ‘start jumping’	–	+	above LP	–
<i>Po-</i>	delimitative	<i>po-prygatj</i> ‘jump for a while’	–	+	above LP	–
<i>Na-</i>	cumulative	<i>na-bratj</i> ‘take a lot’	+	+	below <i>po-</i>	+
<i>Pere-</i>	distributive	<i>pere-lovitj</i> ‘catch one by one’	+	+	above LP	+
<i>Ot-</i>	terminative	<i>ot-robotatj</i> ‘finish working’	–	+	above LP	–
<i>Pro-</i>	perdurative	<i>pro-robotatj</i> ‘work for a long time’	–	+	above LP	–
<i>Iz-</i>	completive	<i>iz-ranitj</i> ‘wound all over’	+	–	below <i>po-</i> , 3	4
<i>Do-</i>	terminative	<i>do-plavatj</i> ‘complete swimming’	–	+	above LP	–
<i>Po-</i>	distributive	<i>po-brosatj</i> ‘throw one by one’	–	+	above LP	–
<i>Pri-</i>	attenuative	<i>pri-otkrytj</i> ‘open slightly’	+	+	below <i>po-</i> , above <i>pod-</i>	+
<i>Pod-</i>	attenuative	<i>pod-zabytj</i> ‘forget slightly’	+	+	below <i>po-</i> , <i>pri-</i>	+
<i>Pere-</i>	terminative	<i>pere-plavatj</i> ‘complete swimming’	–	+	?	–

Table 6: Inventories of SLPs

The diagnostics do not always converge, and depend on the particular instantiation of the prefix. E.g. the inceptive prefix *za-* cannot be inside secondary imperfective scope with most verbs, but can with *za-petj* ‘start singing’ and *za-boletj* ‘to fall sick’. Such exceptions can be handled in two ways: either we believe that the prefix is superlexical based on meaning, and accept that under certain conditions a superlexical prefix may fall inside the scope of secondary imperfective. The second alternative is to accept that secondary imperfective diagnostics works, and to take it as evidence that in this case the prefix is lexical. I will choose the second way out.

The superlexical prefix *za-* usually does not fall inside the scope of secondary imperfective, e.g.

za-prygivatj cannot mean ‘to start jumping’, but only a secondary imperfective of the directional verb with the lexical prefix (‘to be in the process of jumping in’). Thus, *za-petj* ‘to start singing’ is an ill-chosen example for a superlexical prefix, as in this case the prefix does not fully pass any tests for superlexicals: it allows secondary imperfective *za-pevatj* ‘to start singing.IMPf’. The meaning is only partially compositional. While the imperfective form can be interpreted as an iterative form of ‘to start singing’ or ‘to be in the process of beginning to sing’, it also has a non-compositional meaning referring to folk singing tradition, where one person sings the first phrase of the song and then the chorus joins. This solo singer is called *za-pe-va-la* and what he does is *za-pevatj* ‘to start singing’. Nominalization is also possible, where the noun *za-pevanie* ‘beginning to sing’ is a legitimate form. To the extent prefix stacking is acceptable, the stacked delimitative prefix *po-* may precede *za-*, but lexical prefixes may follow.

- (41) a. *po-za-pevatj*
DELIMITATIVE-INCEPTIVE-sing-2IMPf-INF
‘to start singing a little’
- b. *za-pod-pevatj; za-na-pevatj; za-vy-pevatj*
‘To start singing along, to start humming, to start singing out’.

In (41-b) the meaning is entirely compositional, and no secondary imperfectivization or nominalisation is possible. I take it as evidence that in (41-a) we see an example of a lexical prefix, while in (41-b) the prefix *za-* is used superlexically. Since there are plenty of uncontroversial examples of existence of a lexical and a superlexical *za-*, different sites of prefix attachment with the same verb are not in principle ruled out.

The fact that the meaning is inceptive, similar to superlexical use is not a problem for my analysis, as I actually argue that a central meaning of a prefix in different uses remains the same. Since *za-* is a goal prefix and denotes a transition into a new state, place, or activity, the meaning of ‘starting to sing’ is possible for a lexical use as well. It must be noted that the verb *za-pevatj* is more frequently used transitively *za-petj pesnju* ‘to start singing a song’, thus the change of state means bringing a song into being.

Similarly, *za-boletj* ‘to fall sick’ is often cited as a counterexample, because it has inceptive meaning but allows secondary imperfective *za-bolevatj* ‘to be in the process of falling sick / to fall sick regularly’. I suggest to take availability of secondary imperfectives diagnostics seriously, and accept it as evidence that in this case, as well, *za-* is lexical, with the meaning of entering a new (sick) state. This actually seems a more accurate description than ‘starting the activity of being sick’, predicted by superlexical site of attachment.

This shows that the site of attachment of a prefix must be decided on a case by case basis, keeping in mind that the meaning of the prefix has similarities in lexical and superlexical uses and that in principle the same prefix can be used with the same verb both lexically and superlexically. Compositionality of meaning is not always a straight-forward criteria, since I argue that the meaning of non-ideomatic lexical prefixes is also compositional, except the scale choice depends on context.

Thus, I use secondary imperfectivization as my primary, and most reliable criterion to distinguish the temporal subset of superlexical prefixes. The temporal superlexical prefixes, referring to inception, duration and completion, form a cohesive class according to the diagnostics above:

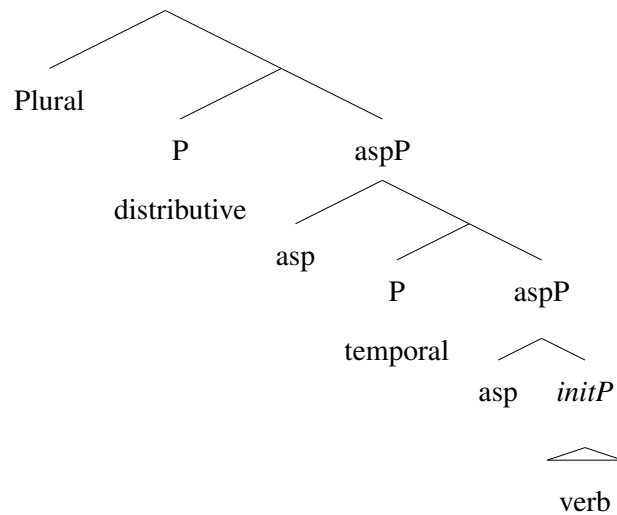
Prefix	Meaning	Example	Secondary Imperfective	Compositional Meaning	Stacking	Nominalization
<i>Za-</i>	inceptive	<i>za-prygatj</i> ‘start jumping’	–	+	above LP	–
<i>Po-</i>	delimitative	<i>po-prygatj</i> ‘jump for a while’	–	+	above LP	–
<i>Ot-</i>	terminative	<i>ot-rabotatj</i> ‘finish working’	–	+	above LP	–
<i>Pro-</i>	perdurative	<i>pro-rabotatj</i> ‘work for a long time’	–	+	above LP	–
<i>Pere-</i>	terminative	<i>pere-plavatj</i> ‘complete swimming’	–	+	above LP, but rarely stack	–

Table 7: Temporal Superlexical Prefixes

I will mainly concentrate on the temporal subclass of superlexical prefixes in this dissertation, and refer only to this subset by the term ‘superlexical’ in the subsequent chapters. The distributive, cumulative and attenuative prefixes are outside the scope of this dissertation. I assume that distributive (and possibly cumulative) prefixes occupy a higher position and involve a special distributive/plural/cumulative head, as has been suggested by Ramchand (2004) and Romanova (2004c). Then the source of the distributive meaning is this head which pluralizes events. Once

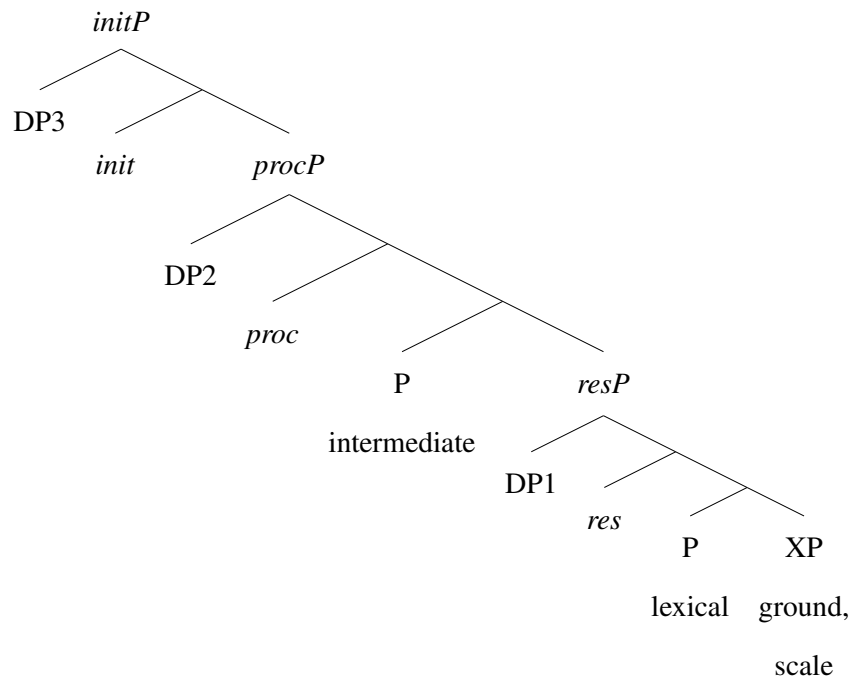
this pluralizing head is added, an additional Asp head can be added above and thus secondary imperfective is possible.

(42)



In addition, repetitive use of *pere-* remains unexplored, as found in *pere-delatj* ‘redo’, *pere-čitaj* ‘reread’, *pere-pisatj* ‘re-write’, etc.. Briefly, I classify it, after Tatevosov (2008) as an intermediate prefix, higher than lexical and lower than superlexical prefixes. I tentatively locate it at *proc-* level, together with intermediate *do-*. I do not give a detailed account of this position, as I concentrate on configurations available to a larger set of prefixes.

(43)



However, this use can be unified with the notion of exceeding a boundary, relevant for other uses of *pere-*. According to Kagan (2013), the relevant boundary for repetitive (and also distributive) uses is the completion of the first event. “What happens is basically the following: we perform an event, reach its completion, and then, by repeating the process, essentially continue to perform the relevant kind of eventuality beyond the completion of the first one. For instance, in case of rereading a book, we keep reading the book in question after having reached its end. In this sense, the reading event proceeds beyond a particular naturally determined boundary.” (Kagan, 2013: p. 508)

Thus, in case of re-reading a book, the event proceeds beyond the end of the book, and since the book remains the same, must return to the beginning. In distributive use, as in *pere-čitaj vse knigi* ‘DISTR-read all the books’ the event continues beyond each book to the next one.

To sum up this section, I show the relevance of lexical vs. superlexical distinction for Russian prefixes, and address the subclasses of superlexical prefixes that remained outside the scope of the current investigation. The chapters 2 - 4 develop the connection between prefix position and interpretation, and such connection is most visible for positions where a large set of prefixes may

attach. In these cases the meaning contribution of syntax is easier to distill from the prefix meaning, as the structural contribution is common for every prefix in the position.

7. Perfectivity and boundedness

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 (Chapter 3). Thus the verb *za-plytj* 'ZA-swim.DIR' can mean 'to swim in/behind something', but cannot possibly mean 'to start swimming'.

A possible explanation, in line with the analysis of English prefixation in chapter 1, and of Russian prefixes *za-* and *ot-* in chapter 2, is that such verbs obligatorily lexicalize a scale of change. The relationship between perfectivity and boundedness of the Rheme is a well known phenomenon with verbs of consumption and creation:

- (44) a. on el jabloki
he ate.IMPF apples
'He was eating apples', 'He has eaten (some) apples'
- b. on s-jel jabloki
he ate.PF apples
'He has eaten the apples'.

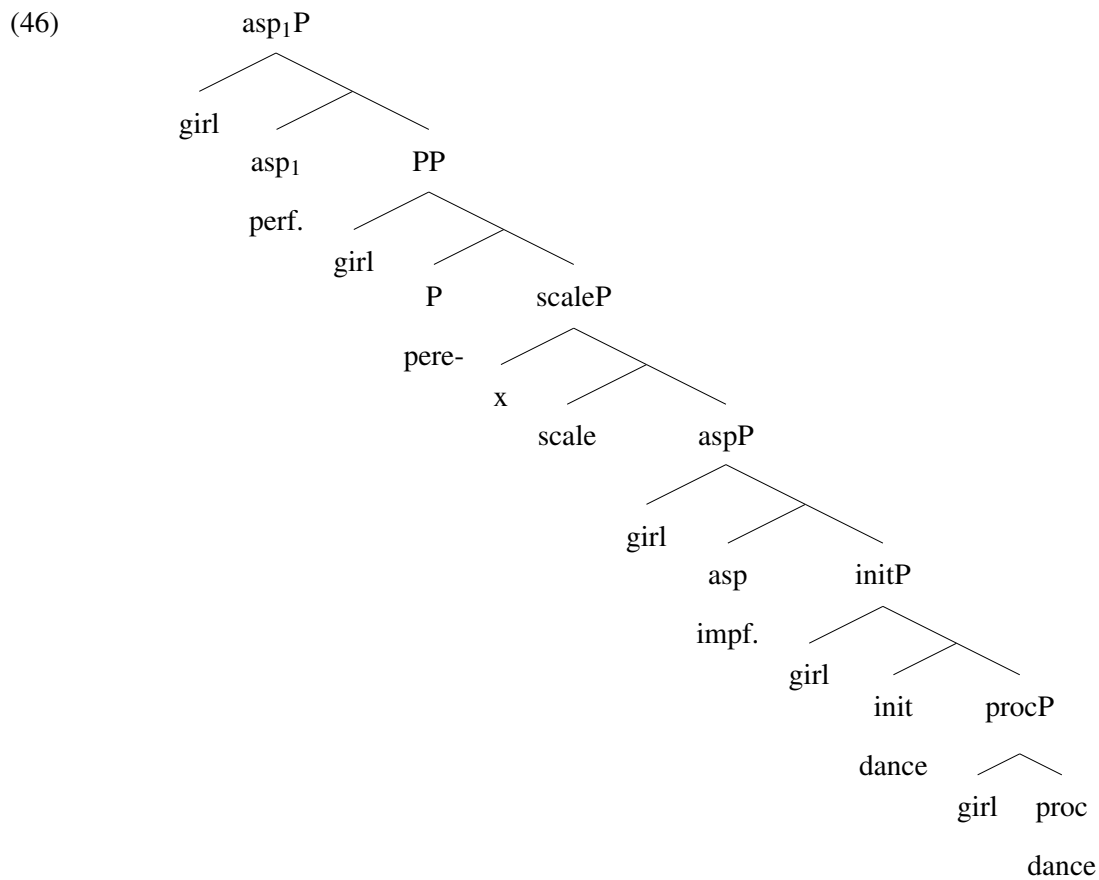
Similarly, if we want to make a perfective out of a verb lexicalizing a scale, the scale must be bound, with a definite orientation, which is achieved by its combination with a lexical prefix. If we attach a superlexical prefix, the scale will remain an unbounded set of values incompatible with perfectivity. Thus, (45-a) is imperfective, the process is mapped to the entire path to the forest, and the time on the temporal trace of the event is indefinite, and the subject can be located anywhere on the scale. (45-b) is perfective, and the result state is mapped to the end of the path, so the time of the event is definite, precisely when the subject enters the forest.

- (45) a. on šol v les
he walked.IMPF to forest

'He was walking to the forest'

- b. on za-šol v les
 he za-walked.PF in forest
 'He entered the forest'.

Ramchand (2008a) suggests that *Asp* is a function that yields a *t* variable in the temporal trace of *e*, and *t* may be definite (if perfective) or indefinite (imperfective). If *t* is definite, the corresponding point on the scale of change must also be definite. A prefix then is required to map the result event to a definite point on the scale: a goal prefix to map it to the maximal point, a source prefix to map it to the transition out of the minimum point, or a route prefix to map it to the end of the ground. If *t* is indefinite, then the process is mapped to the scale of change without selecting a single definite point on the scale.



If the lower AspP yields an indefinite time variable (interval), the scale head may create a set of time points corresponding to the event, and then the higher Asp with the superlexical prefix is mapped to a definite time point at the beginning, end, or excess point in (46)). Two Aspect heads are also required to handle cases with a superlexical prefix stacking above secondary imperfective.

8. The structure of the dissertation

The thesis is organised as follows. In the first chapter I compare the contrasting syntactic behaviour of the English verbal prefixes *out-* and *over-* and show how their semantic and combinatorial properties can be derived from the different syntactic positions. I suggest prefix selection and interpretation is predictable if prefixes uniformly select a semantic scale as a complement. I show that a prefix may only combine with the verb if the verb lexicalizes a scale of the appropriate shape. For example ‘over’ makes reference to a functional standard and selects scales of gradual change which provide such a point. ‘Out’ transition just needs a minimum point, and is compatible with lower closed scales.

In the subsequent three chapters I turn to Russian prefix polysemy with the same purpose. The possible prefix complements providing the scale include paths, volume/extent scales, scales of change lexicalized by verbs, and temporal scales.

Chapter 2 shows how the selectional restrictions of the prefixes are derived from their semantics and scale typology. To account for the extensive polysemy of Russian verbal prefixes, I argue that different uses of a single prefix share a core meaning, specified in the lexicon. This conceptual meaning combines with the other, structural, meaning component which is a function of the syntactic position of the prefix. Different prefixes subcategorize for different scale types, because their denotation makes reference to different subparts of a scale.

The third chapter illustrates how the meaning of a prefix is predictable based on the event structure of the verb it attaches to. If the verb lexicalizes a scale, the prefix must measure out the result along this scale. When the verb does not lexicalize a scale, a superlexical prefix measures out the temporal scale. The structure is parallel to the combination with path or scale: the prefix selects the

imperfective aspect phrase as a complement, just like the lexical prefix selects a scale. The temporal trace of the imperfective event in that case acts as a scale, because it has initiation, completion and duration, and its values may be ordered. For some verbs the presence of a lexicalized scale is optional, and in that case a lexical or a superlexical prefix may be added, depending on context.

The fourth paper demonstrates a time-space parallel among the Russian motion verbs. It turns out that prefixes modify path when added onto a directional motion verb and refer to movement in time with non-directional motion verbs. This semantic distinction corresponds to distinct sets of syntactic properties, characteristic of the lexical and superlexical prefixes. The prefixes in the spatial and temporal domain demonstrate an intriguing parallelism. The spatial domain contains separate projections for goal, source and route. I argue that these sub-projections are parallel to inception, completion and duration in the temporal domain. An important piece of syntactic evidence for the decomposition comes from the possibility of modifying each transition point with prepositional phrases. As this sub-structure corresponds to the relevant subparts of the scale, such decomposition supports the scale selection analysis.

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