

## **Why Russian Aspectual Prefixes Aren't Empty**

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**Prefixes as Verb Classifiers**



**WHY RUSSIAN ASPECTUAL PREFIXES AREN'T EMPTY  
PREFIXES AS VERB CLASSIFIERS**

BY

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## NOTE ON NOTATION

To help readers with different backgrounds, both cyrillic and latin script are used to represent Russian in this book. When verbs are cited, they appear in both scripts, separated by a slash, and prefixes are separated from the remaining verb stem with a hyphen. Here is a concrete example of how this is represented in the book: *разгрузить/raz-gruzit'* ‘unload’.

To make it easy for readers to recognize prefixes, largely automatic phonological phenomena that involve prefixes are not represented in the transcription. For example, we use the same transcription for the prefix in both *разгрузить/raz-gruzit'* ‘unload’ and *распутать/raz-putat'* ‘untangle’, as well as in both *отбежать/ot-bežat'* ‘run off’ and *отослать/ot-slat'* ‘send off’.

In longer examples, the verb appears in boldface in both the example itself and the gloss, as we see here:

*Галя развернула вафельку, раскрошила/raz-krošila ee и на ладошке промянула воробью.*

‘Galja opened the waffle, **crushed** it and held it out on her palm for the sparrow.’

When a prefix is named separately, it is represented only in transcription, for example *raz-*. Prefixes in combinations (described in chapter 5) are separated by a | (“pipe”): *ot-|pro-*. Segments that are optional and/or conditioned by various factors appear in parentheses. Thus *удвоить(ся)/u-dvoit'(sja)* ‘double’ is the notation for this verb both with and without the reflexive postfix *-sja*. Likewise, *o(b)-* is a short-hand way of representing the prefix in both *оглушить/o-glušit'* ‘deafen’ and *обрадовать/ob-radovat'* ‘make happy’ (as well as *обокрасть/ob-krast'* ‘rob’, since the second vowel is inserted as a phonological phenomenon). Alternatively this prefix can also be represented as both *o-* and *ob-* when the need arises to distinguish among the two variants.



## PREFACE

The objective of this book is to show how Russian verbal prefixes express meaning, even when they are used to form the perfective partners of aspectual pairs. We argue that the prefixes in verbs like *написать/na-pisat'* 'write' and *сварить/s-varit'* 'cook' have a semantic purpose, even though the corresponding imperfective verbs *написать/pisat'* 'write' and *варить/varit'* 'cook' have the same lexical meanings. We set forward a new hypothesis, namely that the Russian verbal prefixes function as verb classifiers, parallel to numeral classifiers. Our argument draws on research conducted under the auspices of grants from the Norwegian Research Council and the Center for Advanced Study at the Norwegian Academy of Science and Letters in Oslo. In this book we offer the highlights of our findings; readers who wish more detail may consult our articles cited in the references. The target audience includes Slavic linguists and general linguists, as well as teachers and advanced learners of Russian. Though the argumentation is inspired by the framework of cognitive linguistics, this book is designed to be relatively theory-neutral, attractive to all kinds of linguists, and accessible to non-linguists. The studies in the book make use of quantitative research on corpus data and statistical models (chi-square, logistic regression, etc.), though these are presented in a common-sense way that assumes no special expertise. To supplement the book we have created a user-friendly interactive webpage that can be accessed for free at <http://emptyprefixes.uit.no/book.htm>. This webpage houses links to our database plus additional data from the studies we cite.

This book narrates recent breakthroughs in research on Russian aspect and demonstrates a range of methodologies designed to probe the relationship between the meaning and distribution of linguistic forms. These methodologies are used to investigate the "empty" prefixes (Chapters 2 and 3), alternating constructions (Chapter 4), prefix variation (Chapter 5), and aspectual triplets (Chapter 6). Though these phenomena have long been known to exist, their extent and behavior have not been previously explored in such detail. We propose (Chap-

ter 7) that the “purely aspectual prefixes” constitute a system of verbal classifiers akin to numeral classifiers found in many languages of the world. In other words, the verbal prefixes select verbs according to broad semantic traits, categorizing them the way numeral classifiers categorize nouns. The purpose of the prefixes is to convert amorphous states and activities into discrete events and to group verbs according to the types of events they express.

Chapter 1 (Aspectual Prefixes: Emptiness vs. Overlap) presents the Russian aspectual system and the problem of the “purely aspectual prefixes” against the context of other uses of verbal prefixes and suffixes. Two hypotheses are advanced, both of which are well documented in the scholarly literature: the Empty Prefix Hypothesis and the Overlap Hypothesis. According to the Empty Prefix Hypothesis, which is dominant in the field, a prefix that forms an aspectual pair is void of meaning; it merely marks a verb as perfective. The alternative Overlap Hypothesis proposes instead that the meanings of prefixes overlap with the meanings of verbs when they are used to form aspectual pairs. It is this overlap that creates an illusion of emptiness. The remaining chapters provide various kinds of evidence for the Overlap Hypothesis. The database that underlies the studies described in the book is also featured in this chapter.

Chapters 2, 3, and 4 present the principled quantitative methods we have developed to probe the meanings of the prefixes. The prefixes are grouped according to the number of base verbs they combine with to form aspectual partners: the “small” prefixes perfectivize smaller numbers of base verbs (ranging from 3 to 123), whereas the “big” prefixes combine with larger numbers of base verbs (ranging from 142 to 417). We have designed two different methods to handle these two groups of prefixes: “radial category profiling” and “semantic profiling.” In addition, the “constructional profiling” method integrates the variable of grammatical constructions into a case study contrasting the meanings of three prefixes.

Chapter 2 (Small Prefixes: Radial Category Profiling) introduces the radial category model and gives case studies of the radial category profiling methodology applied to “small” prefixes. This method has two steps. In step one we map out the meanings of a prefix on the basis of verbs where the prefix clearly has a “non-empty” meaning because it does not form partner verbs for the imperfective base verbs. Thus step one involves verbs like *pacmonmamъ/raz-toptat'* ‘trample,

crush by stamping' (from *monmamъ/toptat'* 'stamp one's feet') and *раздуть/raz-dut'* 'inflate, swell by blowing' (from *дымъ/dut'* 'blow') and yields a radial category of meanings including items like CRUSH and SWELL. In step two we compare the prefixal meanings found in step one with the meanings of the base verbs in the "purely aspectual" formations, such as *раздавить/raz-davit'* 'crush', the perfective partner of *давить/davit'* 'crush' and *распухнуть/raz-puxnut'* 'swell', the perfective partner of *пухнуть/puxnut'* 'swell'. We show that there is a consistent pattern: the meanings of the base verbs in the supposedly "empty" formations match the meanings of the prefixes in the "non-empty" uses. This finding directly supports the Overlap Hypothesis.

Chapter 3 (Big Prefixes: Semantic Profiling) applies the semantic profiling methodology to the "big" prefixes, where the data is too unwieldy to be handled by the radial category profiling method. Semantic profiling uses a statistical analysis based on the semantic tags assigned to verbs in the Russian National Corpus, and shows that there are significant differences in the semantic patterns of the verbs that are prefixed with the five "big" prefixes. In other words, each prefix combines with verbs of a unique semantic profile.

Chapter 4 (Prefixes and Syntax: Constructional Profiling) investigates the interaction of syntax and prefixation in more detail, looking at the alternation between *нагрузить/po-gruzit'* *ящики на телегу* 'load boxes onto the cart' ("theme-object") and *нагрузить/na-gruzit'* *телегу ящиками* 'load the cart with boxes' ("goal-object"). This study applies the methodology of "constructional profiling." Corpus data reveals that each of the three prefixes that form "purely aspectual" perfectives for this verb has a different syntactic preference: *po-* prefers the theme-object construction, *na-* prefers the goal-object construction, and the distribution for *za-* is more balanced, but strongly influenced by metaphorical uses (*загрузить/za-gruzit'* *человека работой* 'load a person with work'). The differences in distribution of constructions are statistically significant, suggesting that the three perfective partners of *грузить/gruzit'* 'load' are distinct. Hence, the three prefixes involved must likewise be distinct.

The notion of the aspectual pair is challenged by findings presented in chapters 5 and 6, where we see that three, four, or even as many as seven verbs may be involved in a "purely aspectual" relationship. Chapter 5 (Prefix Variation) discusses the use of more than one prefix to form "purely aspectual" perfective partners for a given base

verb. Though we tend to assume that each base verb combines with only one prefix, it is actually the case that over one-fourth of base verbs are more promiscuous, combining with up to six prefixes. *Грузить/gruzit'* ‘load’, for example, has three such perfective partner verbs: *загрузить/za-gruzit'*, *нагрузить/na-gruzit'*, and *погрузить/po-gruzit'*, all of which mean ‘load’. Prefix variation reveals an interaction between the meanings of the prefixes and the meanings of the base verbs. Both similar and contrastive meanings can motivate prefix variation. Where a binary combination of prefixes exhibits similar meanings, the majority of associated base verbs form a coherent semantic group, as in the case of change-of-state verbs associated with *za-|o(b)-*. However, even in combinations that indicate strong similarity, there are contrasting meanings. Some combinations are motivated largely by contrasting meanings, as in the case of *ot-|pro-*, and unattested combinations may involve prefigal meanings that are altogether incompatible.

Whereas prefix variation shows us that a given imperfective base verb can have multiple perfective partner verbs, in chapter 6 (Aspectual Triplets) we are confronted with the formation of secondary imperfectives from “purely aspectual” prefixed partner verbs, as in *множиться/množit'sja* ‘multiply’, which has the prefixed perfective *умножиться/u-množit'sja* and also the secondary imperfective *умножаться/u-množat'sja*. Over one-third of verbs that perfectivize with a prefix also show evidence of secondary imperfectivization in the Russian National Corpus, and Google searches reveal such formations for nearly all verbs. If indeed the prefix had no meaning beyond “+ perfective,” there would be no motive to form secondary imperfectives.

Chapter 7 (The Verb Classifier Hypothesis) presents the hypothesis that the perfectivizing prefixes are verb classifiers. Here we compare the behavior of Russian prefixes with that of other classifiers in languages that are known to have numeral and verb classifier systems, and contextualize this in a discussion of overall parallels between nouns and verbs in Russian. We show that whereas numeral classifiers function in the presence of quantifiers to sort nouns according to the typical shape of an object, the Russian perfectivizing prefixes sort verbs in the presence of perfective aspect (a quantifier) according to the typical path (a kind of shape) of an event. Recognizing Russian prefixes as verb classifiers facilitates typological comparison of Rus-

sian with other verb classifier languages and improved description of the language.

In Chapter 8 (Conclusion) we summarize the findings and how they support the Overlap and Verb Classifier Hypotheses, which have both theoretical and practical implications. The Empty Prefix Hypothesis is tacitly assumed in all textbooks of Russian, which instruct students to memorize hundreds of prefix + verb combinations to form aspectual pairs. This is a formidable and frustrating task. Language learning could be restructured to reflect the meaningful patterns of the Russian verb classifier system, thus making mastery of Russian aspect more coherent and palatable.

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## CHAPTER 1

## Aspectual Prefixes: Emptiness vs. Overlap

This chapter is designed to orient the reader to the relevant facts of Russian aspect and the key issues in the debate over whether verbal prefixes can be semantically empty. By semantically empty we mean that the prefix has no meaning beyond marking perfective aspect. In other words, it has no lexical meaning, though it does have a grammatical meaning. We state the controversy in terms of two hypotheses: the Empty Prefix Hypothesis and the Overlap Hypothesis. We examine these alternatives and their implications for the form-meaning system of Russian. We also present the primary resource we will use to test the hypotheses, a database of verbs containing “purely aspectual” prefixes.

### 1.1. Aspect in Russian: The Role of Prefixes

Russian aspect is the topic of a vast literature. We make no attempt to represent it comprehensively. We merely sketch the basic facts relevant to the behavior of verbal prefixes. Readers who are familiar with the Russian aspectual system will probably want to skip this section.

In Russian all forms of all verbs express aspect. Due to the ubiquity of this distinction, verbs are usually recognized as being either perfective or imperfective,<sup>1</sup> and Russian typically has two (or more) verbs that correspond to a given verb in a language like English where this distinction is lacking. Thus, for example, ‘write’ is rendered as both *nucamъ/pisat’* [imperfective] and *нанucамъ/na-pisat’* [perfective]. Verbs like these have the same lexical meaning, differing only in their aspect, and are therefore often called “aspectual pairs.” Russian uses a system

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<sup>1</sup> There are several hundred so-called biaspectual verbs in Russian, such as *ликвидиро-вамъ/likvidirovat’* ‘liquidate’ that do not mark aspect overtly. However, in context, even the biaspectual verbs function as either perfective or imperfective, never as a neutral aspect. For a discussion and references, see Janda 2004: 523 and 2007: 637–38.

of stems, prefixes, and suffixes to mark aspect. The major patterns<sup>2</sup> in this system are as follows:

- (i) **Simplex verbs** contain only a verb stem, like *nucamъ/pisat'* 'write' and *варитъ/varit'* 'cook', and are generally imperfective.<sup>3</sup>
- (ii) **Prefixed verbs** have a prefix in addition to the stem, as in *нанucамъ/na-pisat'* 'write' and *сваритъ/s-varit'* 'cook', and are generally perfective.<sup>4</sup> In these two examples the prefixed verbs and the corresponding simplex verbs have the same lexical meaning. However, there are also many prefixed verbs that do not have the same meaning as the simplex verbs, as we see in *nepenucamъ/pere-pisat'* 'rewrite', *подписамъ/pod-pisat'* 'sign', *разваритъ/raz-varit'* 'cook until soft', and *поваритъ/po-varit'* 'cook for a while'.
- (iii) **Prefixed and suffixed verbs** have both a prefix and a suffix attached to the stem, as in *переписыватъ/pere-pisyvat'* 'rewrite', *подписыватъ/pod-pisyvat'* 'sign', and *развариватъ/raz-varivat'* 'cook until soft'. These verbs are imperfective and have the same lexical meaning as the corresponding prefixed verbs.

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<sup>2</sup> Some additional patterns are found among Russian verbs, but they are much less frequent and not relevant to our focus on the purely perfectivizing prefixes. The minor patterns of Russian verbs include the following types:

- (a) Suffixed verbs that are either the imperfective partners of simplex perfectives, such as *даятъ/davat'* 'give' or habituels such as *говаривають/govarivat'* 'talk habitually' (see Danaher 2003: 31);
- (b) Semelfactive suffixed verbs, such as *чихнууть/čixnut'* 'sneeze once' (see Dickey and Janda 2009);
- (c) Semelfactive prefixed and suffixed verbs, such as *выпрыгнууть/vy-prygnut'* 'jump out once' (see Makarova and Janda 2009); and
- (d) Multiply prefixed verbs, such as *попереписыватъ/ro-pere-pisyvat'* 'spend some time rewriting/rewrite all of'.

<sup>3</sup> Russian has a handful of simplex perfective verbs like *дамъ/dat'* 'give'. Švedova et al. (1980: 590) list eleven such verbs.

<sup>4</sup> There are exceptions involving verbs of motion, which can produce prefixed verbs that are imperfective, as in *проходитъ/pro-xodit'* 'walk through'. For more discussion, see Nesset 2008 and Janda 2010.

The three major patterns of Russian verbs offer two options for forming aspectual pairs having a perfective and an imperfective verb with the same lexical meaning:<sup>5</sup>

- (a) **Prefixation of a simplex verb**, which yields pairs like *написать/pisat'* 'write', *написать/na-pisat'*, and *варить/varit'* 'cook', *варить/s-varit'*,<sup>6</sup> and
- (b) **Suffixation of a prefixed verb**, which yields pairs like *непреписывать/pere-pisat'*, *непреписывать/pere-pisyvat'* 'rewrite' and *подписать/pod-pisat'*, *подписать/pod-pisyvat'* 'sign' and *разварить/raz-varit'*, *разваривать/raz-varivat'* 'cook until soft'.

This book is primarily concerned with option (a), aspectual pairs that consist of a simplex verb and a corresponding prefixed verb with the same meaning.

## 1.2. Types of Perfectives in Russian

Since our focus is on the meaning of Russian prefixes, it is useful to distinguish among different types of prefixed verbs according to their meanings. Janda (2007) recognizes four main types of perfective verbs in Russian (and similar categorizations are suggested by other scholars, as noted here):

- **Natural Perfectives**, where the lexical meaning matches that of the imperfective simplex verb, as in *написать/na-pisat'* 'write' and *варить/s-varit'* 'cook'. Prefixes used to form Natural Perfectives are often characterized as "purely aspectual" or "semantically empty." Natural Perfectives are acknowledged in this book only when they appear in authoritative dictionaries (see 1.4).

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<sup>5</sup> There is a third option for marking aspectual pairs, namely by suppletion as we see in *говорить/govorit'* [imperfective] and *сказать/skazat'* [perfective], both with the meaning 'say, tell'. Suppletion is unsystematic and limited only to a few verbs.

<sup>6</sup> Zaliznjak and Šmelev (2000: 79) (cf. also Mikaelian, Shmelev, and Zalizniak 2007: 318) prefer to state this relationship as "deprefixation." However, the direction of the relationship is not crucial in the present analysis. Regardless of the direction, we have a relationship between a simplex verb and a prefixed verb with the same meaning.

- **Specialized Perfectives**, where the lexical meaning of the verb is different from that of the corresponding simplex verb. Examples from above are: *непенука́ть/pere-pisat'* 'rewrite', *подпи́сать/pod-pisat'* 'sign', and *развари́ть/raz-varit'* 'cook until soft', formed from the simplex verbs *пи́сать/pisat'* 'write' and *вари́ть/varit'* 'cook'. Typically the imperfective partner verb is secondarily derived via a suffix, as in *непени́сьвать/pere-pisyvat'* 'rewrite' (and other examples of suffixation of a prefixed verb above).
- **Complex Act Perfectives**, where the prefix sets boundaries on the action named in the simplex verb. Complex Act Perfectives express activities that begin, end, or last for a certain time. Examples are verbs like *повари́ть/по-varit'* 'cook for a while' and *зачиха́ть/за-čixat'* 'start sneezing'. Complex Act Perfectives typically lack imperfective partner verbs.<sup>7</sup>
- **Single Act Perfectives**, which express a single performance from a series, as in *чихну́ть/čixnut'* 'sneeze once' and *сглу́пить/s-glupit'* 'do one stupid thing'. Single Act Perfectives typically lack imperfective partner verbs. Single Act Perfectives can be formed either with the suffix *-nu* or the prefix *s-* and, as with the Complex Act Perfectives, these morphemes contribute a predictable meaning. Single Act Perfectives are more marginal in the Russian aspect system than the other types of perfectives and are mentioned only rarely in this book.<sup>8</sup>

We are concerned primarily with the behavior of prefixes in Natural Perfectives since this is the environment in which prefixes are claimed to be "empty" or to have "purely aspectual meaning." We

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<sup>7</sup> Linguists have used various terms to distinguish the "non-empty" use of prefixes in Specialized and Complex Act Perfectives. The prefixes in Specialized vs. Complex Act Perfectives have been called "qualifiers" vs. "modifiers" (Isachenko 1960: 222–24), "internal" vs. "external," and "lexical" vs. "superlexical" (Svenonius 2004a–b, 2008; Ramchand 2004; Mitrenina, Romanova, and Sljusar' 2012).

<sup>8</sup> Makarova and Janda (2009) have identified an additional type of perfective verb in Russian, the Specialized Single Act Perfective, which is a prefixed variant of the Single Act Perfective and not relevant to the analysis in this book. An example is *выпрыгну́ть/vy-prygnut'* 'jump out once'.

compare and contrast the use of prefixes in Natural Perfectives with their use in the other types of perfectives where everyone agrees that prefixes have meanings.

The formation of Natural Perfectives via prefixation of imperfective simplex verbs is a prominent feature of the Russian aspectual system. 1,429 simplex verbs form Natural Perfectives using the following sixteen prefixes (listed in order of frequency):

*po-, s-, za-, o(b)-, na-, pro-, vy-, raz-,  
iz-, u-, v(o)z-, ot-, pri-, pere-, pod-, v-*<sup>9</sup>

Because some verbs use more than one prefix for this function (see chapter 5), this yields 1,981 prefixed Natural Perfectives that share the lexical meaning of their simplex partners. These numbers come from the database described below in 1.4.

The Natural Perfectives play a central role in the lexicon of Russian, and one type of evidence for this is their frequency as attested in the Russian National Corpus. For every single prefix, the median token frequency of Natural Perfectives far exceeds that of Specialized and Complex Act Perfectives. For example, the median frequency of Natural Perfectives prefixed in *vy-* is 66.5, whereas the median frequency of Specialized Perfectives for *vy-* is only 8. The average median frequency of Natural Perfectives is 107, while for other prefixed perfectives it is 9.7 (Kuznetsova 2010). In other words, Natural Perfectives are on average ten times more frequent than other kinds of perfective verbs.

To summarize, given the number of verbs and the frequency of their use, the Natural Perfectives play a pivotal role in Russian. Understanding how Natural Perfectives are formed via prefixes is fundamental to a satisfactory description of Russian grammar, and can contribute to our theoretical understanding of how aspectual systems function.

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<sup>9</sup> Cf. Krongauz (1998). This list collapses some prefixes that are etymologically related but not entirely identical in their behavior, namely *o-*, *ob-*, and *obo-*, plus *vz-* and *voz-*. These relationships are discussed in more detail below and in chapter 2.

### 1.3. Two Hypotheses: Empty Prefixes vs. Overlap

There are two hypotheses about the status of prefixes in Natural Perfectives. Both hypotheses are motivated by the same problem, namely the fact that a Natural Perfective has the same lexical meaning as the corresponding simplex verb. The first hypothesis is the Empty Prefix Hypothesis.

**Empty Prefix Hypothesis:** The prefix makes no contribution to the meaning of the Natural Perfective.

Using an algebraic kind of logic where meanings are values, the Empty Prefix Hypothesis is a reasonable solution. If “m” is the lexical meaning of a verb and “s” is a simplex verb, we already know that the simplex verb has a given meaning, so semantically:

$$s = m.$$

Now if we add a prefix “p,” we have a combination that has the same meaning, so:

$$p + s = m.$$

If both of these equations are true, we are forced to conclude that  $p = 0$ . In other words, the prefix has no meaning since when it is added the meaning of the verb is not changed.

The Empty Prefix Hypothesis has been by far the most popular and influential solution offered in the scholarly literature. We will trace here some highlights from the history of this hypothesis.

Šaxmatov (1952: 201–02; first edition 1913) states that there is a general rule in Russian grammar according to which an imperfective verb becomes perfective when it is combined with a prefix, and in the process the prefix “loses its meaning” (утрачивает свое реальное значение). There are also examples of verbs in which prefixes retain their meanings in perfective verbs, but in such cases there are secondary imperfectives. The latter group is equivalent to Specialized Perfectives, but Šaxmatov includes both Natural and Complex Act Perfectives in the first group where the prefix “loses its meaning.”

Subsequent scholars have restricted the phenomenon of “empty” or “purely aspectual” prefixes to the group of Natural Perfectives.

Vinogradov (1972: 395–424; first edition 1948) asserts that aspectual pairs, which can be formed both by prefixation and by suffixation, are not pairs of independent verbs, but rather forms of a single verb. In such situations prefixes function more like endings in an inflectional paradigm, and they mark purely aspectual relationships among verb forms. The impact on prefixes is a tendency “toward the weakening or removal of their meanings” (к ослаблению или устраниению их реальных значений; 1972: 406). This tendency is strongest for *po-* and *o-*, which are simply formal markers of perfective aspect, but is also observed with *s-* and less frequently with *za-*. According to Vinogradov, the prefixes *na-*, *vz-*, and *u-* have not yet become purely formal markers; *iz-* and *vy-* only rarely appear in this function, and even more rarely *pri-*. *Raz-* can be a formal marker, but only for certain kinds of verbs, and the following prefixes almost never lose their meanings: *pro-*, *pere-*, *do-*, *nad-*, *pod-*, *ot-*. Vinogradov admits that prefixes also perform a derivational role in creating new verbs (what we call Specialized Perfectives), and that in such cases they retain their meanings.

Tixonov (1964 and 1998) is perhaps the most outspoken proponent of the Empty Prefix Hypothesis, and devotes the bulk of his 1998 book (pp. 29–175) to the “purely aspectual” prefixes. Like Vinogradov, Tixonov considers the “empty” prefixes to be inflectional elements that have no meaning, as distinct from the use of “non-empty” prefixes in the domain of word-formation to derive new verbs. Tixonov asserts that many verbs (in particular more recent borrowings into Russian) have received their prefixes after the prefixes had already lost their meanings (citing examples like *оштрафовать/o-štrafovat'* ‘fine’, *сфотографировать/s-fotografirovat'* ‘photograph’, *законсервировать/za-konservirovat'* ‘preserve’), so the prefix never had any meaning in relationship to such verbs. Tixonov (1998: 32–33) warns against the “primary danger” (главная опасность) of mixing historic facts with synchronic ones inherent in suggesting that “purely aspectual” prefixes are associated with semantically compatible groups of verbs.

Avilova (1959 and 1976) finds many of Vinogradov’s and Tixonov’s arguments convincing, but does not agree that prefixation should be treated as part of inflection. For Avilova (1976), prefixes always operate in the domain of word-formation, and she insists on “recognizing aspect as a lexico-grammatical category that opposes dif-

ferent verbs" (Признавая вид лексико-грамматической категорией с оппозицией разных глаголов; 1976: 153). However, Avilova does accept "the existence of purely aspectual (grammaticalized, desemanticized) prefixes" (наличие чистовидовых (грамматикализованных, десемантизированных) приставок; 1976: 153–54), which she labels "aspectualized" (аспектуализированными). Different prefixes show different degrees of "aspectualization," and verbs need not be fully semantically identical in order to behave as pairs.

Forsyth's objective is to prove that Russian aspect is a privative opposition in which perfective is the marked member. Such an opposition can exist only if there is a system of paired verbs. In his "Defence of prefixal pairs" Forsyth (1970: 38–43) warns that if one argues against "empty perfectivising prefixes," "the logical conclusion of this approach ... would be the total rejection of prefixal pairs." According to Forsyth, such arguments are "unreasonable"; the "commonsense approach" dictates the acceptance of both aspectual pairs and "empty" prefixes.

Although Čertkova (1996) equivocates about the derivational status of prefixes, saying that "aspectual derivation is on the borderline between word-formation and inflection" (виdeoобразование находится на границе между словообразованием... и словоизменением; 1996: 122), she upholds the tradition according to which aspectual pairs are formed "with purely aspectual, desemanticized prefixes" (с чистовидовыми, десемантизованными приставками; 1996: 110). Čertkova considers only five prefixes to be productive in forming aspectual pairs in Russian: *po-*, *pro-*, *za-*, *s-*, *ot-*. Of these *po-* is considered the most desemanticized, whereas the remaining prefixes can retain some "trace" ("след") of meaning. However these "traces" are described only very briefly and abstractly, as in "the prefix *s-* adds a general meaning of the achievement of a result" (Приставка *c-* придает общее значение достижения результата; 1996: 124–25).

More recently, Mironova (2004)<sup>10</sup> has focused on the fact that verbs are often polysemous and imperfective vs. perfective partner verbs do not always match in all of their meanings (referred to as *лексико-семантические варианты* "lexical semantic variants"). Mironova examines perfectivization at the level of specific meanings of a verb, ra-

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<sup>10</sup> An abbreviated version of this work is available online at: [http://www.dissercat.com/  
content/vid-glagola-i-sootnoshenie-leksiko-semaniticheskikh-variantov-mnogoznachnogo-slova](http://www.dissercat.com/content/vid-glagola-i-sootnoshenie-leksiko-semaniticheskikh-variantov-mnogoznachnogo-slova)

ther than at the level of the verb (lexeme). She asserts that there are purely aspectual prefixes, and that while some of them extend to all meanings of a given verb, some are applicable only to one or a subset of a verb's meanings. Mironova claims that nearly all Russian prefixes are used as "purely aspectual" prefixes, though they differ in their ability to perform this role. She lists four prefixes that never lose their lexical meanings and do not form aspectual partner verbs: *do-*, *nad-*, *pre-*, *pere-*. On the other end of the spectrum she cites the prefixes *po-*, *ob-*, *s-* as those which most frequently lose their lexical meaning and perform the role of purely aspectual prefixes.

In addition to this scholarly tradition, the Empty Prefix Hypothesis is tacitly assumed in textbooks of Russian that instruct students to memorize combinations of prefixes and simplex verbs in order to learn verb pairs.

An alternative is the Overlap Hypothesis.

**Overlap Hypothesis:** The prefix makes a contribution to the meaning of the Natural Perfective. However, the meaning of the prefix overlaps with the meaning of the simplex verb.

The Overlap Hypothesis is an alternative, minority view that the prefix is meaningful, but its meaning is obscured by the fact that it overlaps with the meaning of the simplex verb. The logic of the Overlap Hypothesis can be stated in terms of visual perception. Let us assume that meanings are like colors. If we have a simplex stem with a meaning that is "blue" and we attach to it a prefix that has the same semantic color "blue," the prefix seems to disappear. We cannot see a blue object against a blue background. This does not mean that the prefix has lost its semantic color and become transparent. The prefix is still blue. The prefix seems to be invisible, but that is an illusion caused by overlap.

The Overlap Hypothesis is stated overtly (though in a variety of terminological guises) in van Schooneveld 1958 and Isačenko 1960 (cf. also Vey 1952 with reference to Czech). One could additionally claim Zaliznjak as an adherent of the Overlap Hypothesis since in his 1980 *Grammatičeskij slovar'* he acknowledges as aspectual pairs only those formed by suffixation.

While there is clearly sympathy for the Overlap Hypothesis, there has as yet been no comprehensive argument in favor of it that is suffi-

cient to lay the Empty Prefix Hypothesis to rest. Krongauz (1998: 80–82) states that the tradition of the empty prefix is a “chronic” problem in Russian, and Zaliznjak and Šmelev (2000: 81) call it an “eternal” problem. Timberlake (2004: 410–11) is equivocal: while he suggests that in some instances “the prefix seems to have lost its meaning,” in the same sentence he states that “more commonly the prefixed derivative still has a trace of its own meaning.” In a review of the issue of aspectual pairs in Russian, Gorbova (2011) states that “it seems that the Vey–van Schooneveld structural model... has the necessary explanatory power,” but this remark is tucked into a footnote.

Sympathizers have stated support for the Overlap Hypothesis, but have not succeeded in presenting compelling evidence for it. Our aim in this book is to take up this challenge, using extensive empirical studies and statistical analyses presented in chapters 2–6.

Despite the fact that the Empty Prefix Hypothesis prevails in scholarship and pedagogy, the Overlap Hypothesis is appealing for a number of reasons. Consider the following thought experiments that test the assumptions of the Empty Prefix Hypothesis:

Q: Imagine that you have a language that needs to mark “+ perfective” on verbs. How many markers does the language need to achieve this task?

A: One.

Fact: Russian has sixteen different markers for “+ perfective.”

Let’s accept for the purpose of further argumentation that we have sixteen different markers all with the same value, “+ perfective,” and move on to the following questions:

Q: Imagine that you have a set of simplex verbs and a set of “+ perfective” markers, all with the same “zero” meaning. You are supposed to combine them. How will you do this?

A: Randomly.

Fact: The distribution of prefixes across Russian verbs is not random. If verbs were combined with prefixes at random, the number of verbs taking each given prefix would hover around the average, which is 124 (1,981 verbs divided by 16 prefixes). The actual distribution has structure that needs to be accounted for, since

some prefixes combine with many verbs (*po-* combines with 417 simplex verbs), while others combine with very few verbs (*v-* combines with only 3 verbs; see Figure 1 below). Note also that when new verbs enter the lexicon of Russian, native speakers agree on which prefix to attach.<sup>11</sup> Thus we get a Natural Perfective with the prefix *pro-* for a borrowed verb that involves movement THROUGH something, as in *профильтровать/profil'trovat'* ‘filter’ and the prefix *za-* is used with a borrowed verb that describes COVERING a surface, as in *заасфальтировать/za-asfal'tirovat'* ‘pave with asphalt’. This is further evidence that the assignment of prefixes to verbs is not random.<sup>12</sup>

- Q: Imagine that you have a simplex imperfective verb. How many “+ perfective” prefixes does your verb need in order to be perfectivized?

A: One.

Fact: 27% of Russian simplex imperfective verbs use between two and six prefixes to form multiple Natural Perfective partner verbs (this is the topic of chapter 5).

The Empty Prefix Hypothesis makes incorrect predictions in all three thought experiments. The facts of Russian contradict the expectations that one must make if one assumes that the prefixes in Natural Perfectives have zero semantic content. To put it simply, the evidence indicates that there must be some structure to this system, but the Empty Prefix Hypothesis cannot tell us anything about it.

Other arguments can be made in terms of the kinds of form-meaning relationships that we find in language. Is it common for linguistic units to turn their meanings on and off? Is it common for linguistic units that co-occur to overlap in meaning? We take up each argument in turn.

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<sup>11</sup> A test of native Russian vs. borrowed verbs reported in Janda and Nesson 2010 showed that Russian dictionaries are actually more likely to agree on a single prefix for the Natural Perfective of a borrowed verb than for the Natural Perfective of a native Russian verb.

<sup>12</sup> In chapter 3 we show that THROUGH is an important meaning for Natural Perfectives formed with *pro-*, while COVER is an important meaning for Natural Perfectives formed with *za-*.

We know that all of the prefixes that are used to form Natural Perfectives and are thus presumed to be semantically “empty” can also be used to form Specialized Perfectives where everybody agrees that the prefix contributes meaning. Table 1 compares some Natural Perfectives with Specialized Perfectives that have the same prefixes.<sup>13</sup>

**Table 1.** Comparison of Prefixes in  
Natural Perfectives and Specialized Perfectives

Natural Perfective	Specialized Perfective	Simplex verb for SP
<i>распухнуть/raz-puxnut'</i> 'swell'	<i>раздууть/raz-dut'</i> 'inflate, swell by blowing'	<i>дуть/dut'</i> 'blow'
<i>украсть/u-krast'</i> 'steal'	<i>убежать/u-bežat'</i> 'run away'	<i>бежать/bežat'</i> 'run'
<i>прилипнуть/pri-lipnut'</i> 'stick'	<i>привязать/pri-vjazat'</i> 'tie onto, attach'	<i>вязать/vjazat'</i> 'tie'
<i>переночевать/pere-nočevat'</i> 'spend a night'	<i>переждать/pere-ždat'</i> 'wait through (something)'	<i>ждать/ždat'</i> 'wait'

In Table 1 it is not necessary to list the simplex verbs for the Natural Perfectives separately because they all have the same meanings as the Natural Perfectives. However, when the same four prefixes are attached to other simplex verbs, there is a clear shift in meaning. For example, *пухнуть/puxnut'* means ‘swell’ even without the prefix, but *дуть/dut'* means ‘blow’ and gets a ‘swell’ meaning only when the prefix *raz-* is attached. The same observation holds for all rows in Table 1.

From the perspective of the Empty Prefix Hypothesis we would say that the prefix does not have meaning in the Natural Perfectives, but does have meaning in the Specialized Perfectives. However, the Empty Prefix Hypothesis cannot tell us anything about which verbs should have empty prefixes and which ones should have prefixes with meanings. Is it natural for a language to have a whole class of items

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<sup>13</sup> Natural Perfectives are identified according to the authoritative sources used in constructing the Exploring Emptiness database, as described in 1.4.

that have a meaning in some contexts and no meaning in other contexts? If the purpose of linguistic forms is to convey meaning, why should some forms turn their meaning off arbitrarily? Do we know of any similar examples? To some extent, the answer depends upon one's theoretical framework. Some linguistic theories readily accept the existence of semantically empty elements, while others eschew the concept of form without meaning.<sup>14</sup> Even within theories that allow for empty elements, there could be differences of interpretation concerning whether the same elements can have both positive and zero semantic values. Thus it may be impossible to answer this question in a way that would satisfy everyone.

The same issue can be approached from the perspective of the Overlap Hypothesis by asking whether it is natural for linguistic elements that co-occur to share semantic content. The answer here is clearer, since the phenomenon of conceptual overlap is robust in language. Computational linguists have long been aware of this, since conceptual overlap is a hallmark of many high-frequency collocations. Stubbs (2001) notes that many collocations share semantic features, such as English *physical assault* and *added bonus*, where the adjectives do not add any new information to the (default) interpretation of the nouns. Langacker (2008: 187–90) points out that the extent of conceptual overlap in language can vary, up to and including complete overlap, and that typically one component provides more schematic information (like the adjectives above), while the other is more specific (like the nouns). Note that the same adjectives can of course be used in other collocations where they are not redundant, as in *physical stress* and *added sugar*. Russian prefixes are like the adjectives in these collocations. The prefixes are more schematic and can overlap with the meanings of simplex verbs to the extent that they are largely redundant (as in Natural Perfectives), or they can contrast with the meanings of simplex verbs (as in Specialized Perfectives). Similar conceptual overlap can of course be found in Russian, and one type of example involves prefix-preposition collocations with motion verbs, like *on*

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<sup>14</sup> An example of a proposal that there may be form without content is Aronoff's (1994: 25) "morpheme," which is a purely morphological entity. By contrast, Langacker (1987: 53–54; 2008: 25) argues for the "content requirement," according to which all phonological structures are connected to semantic structures.

*быстро поднялся и неслышно отошел/от-šel от костра*<sup>15</sup> 'he got up and silently **walked away** from the campfire'. Here *ot(-)* appears both as a prefix on the verb indicating 'away' and as a preposition meaning 'away from'. So we know that conceptual overlap is common in languages, including Russian, and that it is relevant to prefixes. The Overlap Hypothesis thus invokes phenomena that are well attested in language to account for the observed difference between the behavior of prefixes in Natural Perfectives and Specialized Perfectives.

The thought experiments and arguments above contradict the Empty Prefix Hypothesis, yet they are not altogether new. Still, no one has yet succeeded in proving that the prefixes are not empty. Instead the status of the prefixes has persisted as one of the most long-standing and intractable problems in the field. Krongauz (1998: 82) labels it a "chronic" problem lacking a satisfactory solution. The purpose of this book is to move the debate beyond the realm of theoretical speculation by confronting the Empty Prefix Hypothesis with detailed data that show how the meanings of prefixes and verbs interact.

The Empty Prefix Hypothesis can be thought of as a kind of null hypothesis since it presumes no meaning and no structure. Though it is not possible to test the Empty Prefix hypothesis directly, it is possible to test corollaries of the hypothesis that can be operationalized. Each of the following five chapters opens with a corollary of the Empty Prefix Hypothesis, which we proceed to falsify on the basis of quantitative data. In chapters 2, 3, and 4 the corollaries specify the distributional patterns that would be expected if the prefixes are semantically empty. In chapters 5 and 6 the corollaries specify the kinds of aspectual pairs that should exist if the prefixes are semantically empty.

#### 1.4. A Database of Prefixes and the Pairs They Form

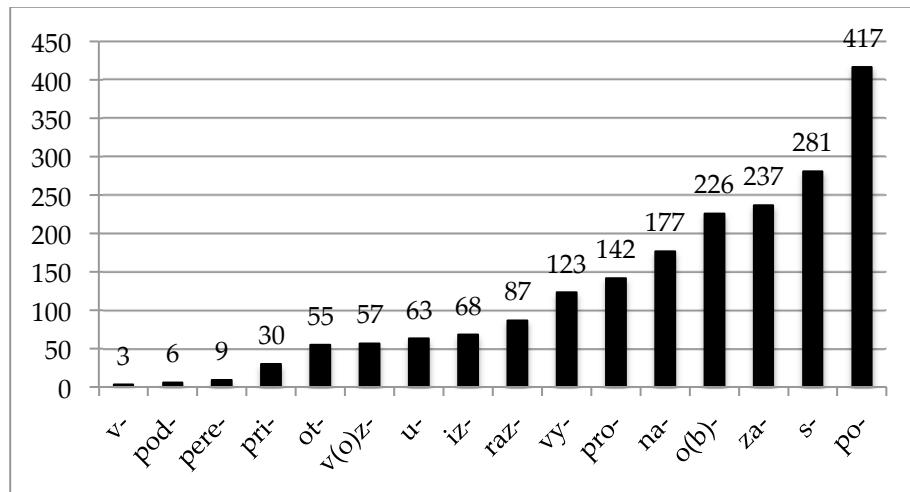
Although information about which combinations of prefixes and simplex verbs form Natural Perfectives has been available for as long as there have been dictionaries of Russian, it is well buried in scattered dictionary entries. In order to make this information accessible and manipulatable, we have developed the "Exploring Emptiness" data-

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<sup>15</sup> [Дмитрий Глуховский. Метро 2033 (2005)]. This example and all others in this book are taken from the Russian National Corpus.

base, an inventory of Natural Perfectives in Russian, publicly available at: <http://emptyprefixes.uit.no>. This database houses information pertaining to 1,981 Natural Perfectives formed via prefixation, which includes all such perfectives listed in three dictionaries and vetted by a panel of native speakers.<sup>16</sup> The database is organized according to the following searchable parameters: verbs, aspect, prefixes, prefix variation (when more than one Natural Perfective exists), morphological class (according to Zaliznjak 1980), semantic class (according to the Russian National Corpus), frequency (Lyashevskaya and Sharoff 2009), dictionary definition, and source (Evgen'eva 1999, Ožegov and Švedova 2001, and Cubberly 1982).

The database shows that the prefixes are distributed across simplex verbs as in Figure 1. Each bar represents the number of simplex verbs that form Natural Perfectives with the given prefix.



**Figure 1.** Distribution of Natural Perfectives across Prefixes

The studies in chapters 2 through 6 all take the Exploring Emptiness database as their point of departure, since it represents the set of pre-fixed Natural Perfectives and relevant variables associated with them.

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<sup>16</sup> The dictionaries are: Evgen'eva 1999, Ožegov and Švedova 2001, and Cubberly 1982. The panel of native speakers are: Olga Lyashevskaya, Julia Kuznetsova, Svetlana Sokolova, and Anastasia Makarova.

The distribution in Figure 1 shows differences in how many Natural Perfectives each prefix forms and these differences suggest different strategies for investigating the meanings of the prefixes. At the low end of the scale there is not enough data for statistical tests, but it is reasonable to undertake manual comparison of the Natural Perfectives with other perfectives (mostly Specialized and Complex Act Perfectives) formed with the same prefixes. At the high end of the scale the quantity of data is sufficient to support statistical models, but is unwieldy for manual inspection (inclusion of all types of perfectives for *po-*, for example, would involve thousands of verbs). Detailed manual analysis of meanings at the high end of the scale is also problematic given that the meanings of these prefixes are more diffuse; *po-* serves as a “default” perfectivizer (Dickey 2007).

In principle it would be possible to simply break the distribution in two at some arbitrary point, yielding a group of “small” prefixes with the fewest Natural Perfectives (*v-*, *pod-*, *pere-* ...) and a group of “big” prefixes with the most Natural Perfectives (... *za-*, *s-*, *po-*). One could then apply the most appropriate strategy to each group of prefixes. However, there are some additional relevant issues that are worth considering. One issue is that it is advantageous to look at a smaller number of prefixes at the high end of the scale since comparisons across additional prefixes greatly increase the risk of paucity of data problems for statistical models. So the group of “big” prefixes should be smaller than the group of “small” prefixes. There are additionally two places in this distribution where relationships among prefixes need to be considered. The prefixes *vy-* and *iz-* have a special relationship in Russian since they share meanings and often distinguish verbs only according to register and metaphorical usage (Neset, Endresen, and Janda 2011). For example, Russians use *вылить/vy-lit'* *воду* to say ‘pour out water’ in the physical domain, but in metaphorical expression they say *излить/iz-lit'* *гнев* ‘pour out anger’. It would not make sense to separate the two prefixes and analyze *vy-* among the “big” prefixes, but *iz-* among the “small” prefixes; these two prefixes should be analyzed together. Given that the “small” prefixes should be the larger group and that *iz-* has a type frequency similar to other prefixes we might consider “small” (*u-*, *v(o)z-*, *ot-*), it seems wise to also include *vy-* (and therefore *raz-*) among the “small” prefixes. The other issue is the fact that *o(b)-* has often been postulated as two separate though et-

ymologically related prefixes, namely *o-* and *ob-*.<sup>17</sup> If we distinguish them, we find that *o-* forms 182 Natural Perfectives, whereas *ob-* forms only forty-four Natural Perfectives. As with *vy-* and *iz-*, it would make no sense to separate *o-* from *ob-* across two different analyses. Fortunately the task of manually sorting through the thousands of perfectives formed with *o-* and *ob-* (and *obo-*) has been undertaken, with the result that there is a compelling case in terms of semantic overlap for collapsing the variants, and there is also a manual analysis of the meanings available (Baydimirova 2010). Thus we include *o(b)-* among the “small” prefixes.

Given these considerations, we break up the distribution shown in Figure 1 as follows:

- Eleven small prefixes: *v-*, *pod-*, *pere-*, *pri-*, *ot-*, *v(o)z-*, *u-*, *iz-*, *raz-*, *vy-*, *o(b)-*; and
- Five big prefixes: *pro-*, *na-*, *za-*, *s-*, *po-*.

Chapter 2 will present the meanings of the small prefixes based on detailed manual analysis comparing the observable meanings that prefixes bring to perfectives other than Natural Perfectives with the meanings of simplex verbs that form Natural Perfectives. Chapter 3 will approach the meanings of the big prefixes by applying statistical models to the semantic tags assigned to their Natural Perfectives in the Russian National Corpus. Both studies give direct evidence for the Overlap Hypothesis.

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<sup>17</sup> Alekseeva (1978), Andrews (1984), and Krongauz (1998: 131–48) all argue that *o-* and *ob-* are distinct.



## CHAPTER 2

## Small Prefixes: Radial Category Profiling

We open this chapter by stating the corollaries of the Empty Prefix and Overlap Hypotheses that we will test. We then discuss our model of meaning and describe our methodology in detail before turning to our analysis. This chapter focuses on the eleven “small” prefixes that form the fewest numbers of Natural Perfectives, as identified in section 1.4 using data from the Exploring Emptiness database: *v-*, *pod-*, *pere-*, *pri-*, *ot-*, *v(o)z-*, *u-*, *iz-*, *raz-*, *vy-*, *o(b)-*.

### 2.1. Corollaries to Be Tested

**Corollary 1 of the Empty Prefix Hypothesis:** Because prefixes have no meaning in Natural Perfectives, we expect to find no pattern matching the meanings of a prefix in other perfectives with the meanings of the simplex verbs that form Natural Perfectives with the same prefix.

**Corollary 1 of the Overlap Hypothesis:** Because prefixes retain their meaning in Natural Perfectives, we do expect to find a pattern matching the meanings of a prefix in other perfectives with the meanings of the simplex verbs that form Natural Perfectives with the same prefix.

More simply, we could say that the Empty Prefix Hypothesis predicts that we should find no systematic relationship between the meanings of prefixes and the meanings of simplex verbs in Natural Perfectives, whereas the Overlap Hypothesis makes the opposite prediction, namely that systematic relationships between prefixal and verbal meanings should be evident.

The two hypotheses are tested via a two-step process in which the meanings of a prefix are first established on the basis of usage where everybody agrees that there is meaning present, namely the Special-

ized and Complex Act Perfectives, and second the meanings of the simplex verbs that form Natural Perfectives with that prefix are subjected to a similar analysis. The results of the two analyses are then compared to check for overlap. Before going into the details of this methodology we must first, however, present the model of meaning that we use in the analysis.

## 2.2. The Structure of Meaning: Radial Categories

All scientific models reveal some properties and obscure others, and different scientific models are better at revealing different properties (Lakoff 1987, Langacker 2006). For example, electromagnetic radiation can be understood as both particles and waves. If we were to model it just as particles, it would be hard to see the wave-like properties, and conversely a model that focused only on waves would suppress perception of particle-like behavior. Fortunately modern theories of physics are able to combine both types of insights in a single model.

Scholars of linguistics have modeled meaning in a variety of ways, and the model that we choose matters because we need a model that can accommodate the phenomena we are investigating and give us useful insights. More specifically, we need a way to determine whether there is overlap in meaning. If there is overlap in meaning, we need a way to determine when the overlap is partial and when it is complete (cf. 1.3). In the case of partial overlap, we need to know whether the overlap is patterned randomly or shows a systematic relationship.

We know that many, if not most, linguistic forms are associated with not just one meaning, but several, and this is referred to as polysemy (Greek for “many meanings”). Polysemy is particularly characteristic of Russian prefixes, as we can illustrate with the sample of Specialized Perfectives of *raz-* in Table 1.

**Table 1.** Some Specialized Perfectives and the Meanings Contributed by *raz*<sup>1</sup>

Simplex Verb	Gloss of Simplex Verb	raz-Prefixed Verb	Gloss of raz-Prefixed Verb	Meaning of raz-
<i>нилитъ/</i> <i>pilit'</i>	'saw'	<i>раснилитъ/</i> <i>raz-pilit'</i>	'saw apart'	APART
<i>монмамъ/</i> <i>toptat'</i>	'stamp one's feet'	<i>расмонмамъ/</i> <i>raz-toptat'</i>	'trample, crush by stamping'	CRUSH
<i>катамъ/</i> <i>katat'</i>	'roll'	<i>раскатамъ/</i> <i>raz-katat'</i>	'roll out (dough)'	SPREAD
<i>дымъ/</i> <i>dut'</i>	'blow'	<i>раздымъ/</i> <i>raz-dut'</i>	'inflate'	SWELL
<i>грузитъ/</i> <i>gruzit'</i>	'load'	<i>разгрузитъ/</i> <i>raz-gruzit'</i>	'unload'	UN-

While we see five different meanings for the prefix *raz*- in these examples, we also get the sense that there may be some relationships among the meanings. SPREAD and SWELL, at least, seem rather close in meaning, and can perhaps be related to APART and maybe to the other meanings as well. Polysemy thus presents us with both a diversity of meanings and a possibility that they might be unified in some way. These opposing properties are handled differently in different models of meaning.

Some models of meaning treat polysemy as a list of meanings, much as the meanings of *raz*- are listed in Table 1.<sup>2</sup> A list-type model in a sense could be likened to a model that presented electromagnetic radiation only as particles. List-type models are good at capturing the diversity of meanings and distinguishing among them. The drawback

<sup>1</sup> The meanings in the right-hand column of Table 1 have been deduced on the basis of an analysis of 148 Specialized Perfectives with *raz*- using the method described and illustrated in section 2.5.1.

<sup>2</sup> Bogusławski 1963, Tixonov 1962, Švedova et al. 1980 are examples of list-type descriptions of the meanings of Russian prefixes.

of list-type models is that they cannot accommodate the insight that the meanings are not just a random list. A list-type model posits five (or more) different *raz*- prefixes: *raz<sub>1</sub>*- meaning APART, *raz<sub>2</sub>*- meaning CRUSH, *raz<sub>3</sub>*- meaning SPREAD, etc. The list-type model does not focus on why there are “different” *raz*- prefixes or what sort of relationships there might be among them. Using a list-type model we might be able to compare two lists of meanings and find out whether or not there is overlap and even whether overlap is partial or complete. However, we get no information about the structure of meaning and thus we cannot determine whether partial overlap is systematic or random. In other words, if we have one item with ten meanings and another one that shares five of those meanings, how do we know whether the five meanings form a natural subset or just happen to be picked from the list of ten at random?

There are also models that treat meaning in terms of invariants and features, usually with absolute (+/-) values. We might liken these models to a model of radiation that represented only wave-like properties. Feature-type models have a strength in that they capture the semantic essence and unity of a linguistic form. On the other hand, models of this kind posit meanings that are typically so abstract and vague that they cannot address the diversity we observe.<sup>3</sup> For example, van Schooneveld (1978) defines the meaning of the prefix *na*- as “manifestation, evidence,” and Gallant (1979) defines the meaning of the prefix *vz*- as “+horizontal, +transgression.” There are valuable insights in these analyses, but definitions of this type do not tell us what specific meanings are present or how they are related to each other. Overlap is perceptible in such models only if it is complete; partial overlap is likely to be invisible and the same problem with determining whether partial overlap is systematic or not remains.

Fortunately there is a model of meaning that combines the advantages of both the list- and feature-type models and can reveal whether we have overlap, how extensive it is, and also whether it is systematic. This is possible if we use a radial category model of meaning. Through a series of experiments, Rosch (1978) showed that human beings organize examples of a concept in radial categories, with a central prototype and other less central examples that bear some relationship to the prototype. For example, the English word

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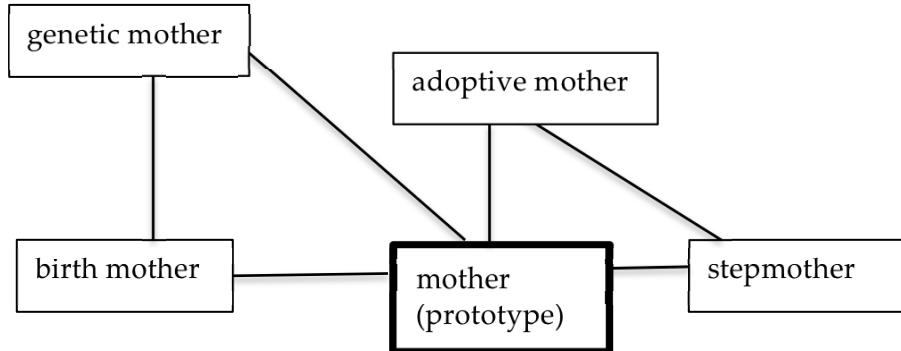
<sup>3</sup> See Wierzbicka’s (1980) critique of Jakobson’s invariants.

*mother*<sup>4</sup> has as its prototype a woman who is married to the father of a child whom she conceives, gives birth to, and nurtures (see Figure 1). However, there are lots of mothers: stepmothers, adoptive mothers, birth mothers, foster mothers, genetic mothers (egg donors), etc., and it is possible to explore the structure of the English *mother* category by looking at the way the various members of this category are related to each other. Cognitive linguistics (see Lakoff 1987, Taylor 2003) has adopted the radial category model for semantic analysis and it has proven an effective means for modeling complex networks of meanings. Rather than being defined by features and boundaries, radial categories are defined by relationships to a prototype. The prototypical member is the semantic center of gravity for a category and typically is most salient and has the most relationships to other members.<sup>5</sup> For example, a *birth mother* conceives and gives birth to a child, whereas a *stepmother* is married to the father. These two peripheral members of the category are not directly related to each other since there is nothing that a *birth mother* and a *stepmother* share. The *genetic mother* is related to the *birth mother* because both have contributed genetic material, and the *adoptive mother* is related to the *stepmother* because both are typically involved in rearing a child. All of these *mothers* are related to the prototypical *mother*, with which they share various characteristics. Note, in addition, that there is a schematic meaning that unites all of the members of the *mother* category: they all refer to a woman who has a familial relationship to a child.

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<sup>4</sup> This example of *mother* is borrowed and adapted from Lakoff 1987: 83–84.

<sup>5</sup> Cf. Geeraerts 1995: 25; Croft and Cruse 2004: 78 and 81; Lewandowska-Tomaszczyk 2007: 155.



**Figure 1.** (Partial) Radial Category for English *mother*

The radial category can represent both the variety and the overall coherence we see in polysemy in the same model since we have both a range of meanings and links between them. In addition, the radial category has something that is lacking in the other models: internal structure. The structure of a radial category shows which meanings are clustered closer together and which are not directly related to each other. If we compare two radial categories and discover that they share some meanings, the internal structure of the categories will show us whether the shared meanings are distributed in a random patchwork fashion or whether they constitute a coherent subset. Given the crucial role of the prototype in motivating other members of a radial category, one would expect that a coherent subset would involve the prototype plus some of the other meanings. In other words, a reduced version of a radial category should involve “pruning” of peripheral members rather than of the prototype. If partial overlap is systematic, the shared portions of a radial category will ideally include the prototype and a subset of meanings that are related to the prototype (and often each other). Overlap that involves coherent subsets shows us that the same radial category is present for the items being compared, though the radial category is more extensive for one item than for the other.

### 2.2.1. Radial Category Profiling

In this chapter we make radial category comparisons between the meanings of a prefix in uses where the presence of meaning is uncon-

troversial and the meanings of the verbs this prefix combines with in Natural Perfectives. This comparison is termed “radial category profiling”<sup>6</sup> and is carried out for all eleven small prefixes in order to test Corollary 1 of our hypotheses. If we find minimal and haphazard sharing of meanings in radial categories, this confirms the Corollary to the Empty Prefix Hypothesis. If we find that the shared meanings are extensive and systematic, this confirms the Corollary to the Overlap Hypothesis.

All eleven radial category profiling analyses below support the Overlap Hypothesis. The analyses show that overlap ranges from complete overlap, through overlap in a majority of meanings, and also overlap in a smaller portion of the radial category. For every prefix the overlap involves the prototype and coherent subsets of the radial category.

### **2.3. Format of Presentation**

The radial category comparisons presented in this chapter are based upon in-depth analysis of thousands of verbs. Our aim is to highlight the relevant structure in this mass of data in a standardized fashion to give a maximally informative overview. To this end, we undertake radial category profiling for three of the prefixes in some detail and give briefer characterizations for the remaining eight. The reader has the option to access the full radial category diagrams along with complete lists of verbs and their classification on our website at [http://emptyprefixes.uit.no/methodology\\_eng.htm](http://emptyprefixes.uit.no/methodology_eng.htm).<sup>7</sup>

Radial category profiling of prefixes involves comparison of behaviors of the different types of perfectives. The status of Natural Perfectives as opposed to Specialized and Complex Act Perfectives is very different in terms of both type and token frequency. The number of prefixed Natural Perfectives is limited by the number of simplex verbs. Natural Perfectives are highly entrenched and dictionaries aim to list

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<sup>6</sup> Radial category profiling (Nesset, Endresen, and Janda 2011) is a specific type of behavioral profiling, which is a recognized method for making comparisons across linguistic data. A behavioral profile is established by collecting and tagging corpus data and then analyzing the structure present in the tagged data (Divjak and Gries 2006; Gries and Divjak 2009). Data can be collected for many types of linguistic parameters. In the present study the meanings in the radial categories are the relevant parameter.

<sup>7</sup> See also Endresen et al. 2012.

them exhaustively. Natural Perfectives thus approximate a closed class with a restricted number of items that have typically relatively high frequency. The list of Specialized and Complex Act Perfectives is by contrast open-ended and potentially vast, and dictionaries do not represent them exhaustively. In terms of token frequency in the Russian National Corpus, we see that the average median frequency of Natural Perfectives is 107, while for other prefixed perfectives it is 9.7.<sup>8</sup>

The difference in closed- vs. open-class status for perfectives justifies different strategies for data collection to adjust for differences in type and token frequency. Since the point of this study is to explore the meanings of prefixes in Natural Perfectives, we include all of them. This means that all of the Natural Perfectives in the “Exploring Emptiness” database (<http://emptyprefixes.uit.no>) formed with our eleven prefixes are accounted for in the analysis. Because of their status in the language, all Natural Perfectives are likely to be familiar to native speakers of Russian. The Specialized and Complex Act Perfectives are an open class, which means that they cannot be accounted for exhaustively, and many of them are of such low frequency that they are not immediately recognizable even to native speakers. The Specialized and Complex Act Perfectives thus pose the risk of overwhelming our dataset with a large quantity of low-frequency and therefore marginal verbs. In order to level the playing field, we have calibrated the representation of Specialized and Complex Act Perfectives to a frequency threshold that approximates that of a typical Natural Perfective. We therefore include only Specialized and Complex Act Perfectives that have 100 or more attestations in the Russian National Corpus.

One further measure was taken in order to ensure that the comparison across different types of perfectives would be commensurate. On the grounds that all the Natural Perfectives in our study have a corresponding imperfective simplex verb, we removed from the study all Specialized Perfectives that lack an imperfective simplex verb. In other words, both the Natural Perfective *распухнуть/raz-puxnut'* ‘swell’ and the Specialized Perfective *раздуть/raz-dut'* ‘inflate, swell by blowing’ have related imperfective simplex verbs since both *puxnut'* ‘swell’ and *dut'* ‘blow’ exist. Though most prefixed perfectives do have imperfective simplex verbs, other types can be found. These include verbs with perfective simplex forms like *раздать/raz-dat'* ‘distribute’,

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<sup>8</sup> See Kuznetsova 2010, cited above in section 1.2.

as well as prefixed verbs that are formed from other parts of speech, such as: noun in *рассекретить/raz-sekretit* ‘reveal’ from *секрет* ‘secret’; adjective in *утяжелить/u-tjaželit* ‘make heavier’ from *тяжелый/tjaželyj* ‘heavy/heavier’; pronoun in *присвоить/pri-svoit* ‘adopt’ from *свой* ‘one’s own’; and numeral in *удесятерить/u-desjaterit* ‘increase tenfold’ from *десятеро* ‘group of ten’. Furthermore, there are prefixed verbs with no unprefixed form at all, such as *обуться/ob-ut’sja* ‘put on one’s shoes’ and *разуметься/raz-ut’sja* ‘take off one’s shoes’, which have no corresponding *\*уметься/ut’sja* in Standard Modern Russian. All of these types were eliminated from the database of Specialized and Complex Act Perfectives to align it with the database of Natural Perfectives. Note, however, that we do include examples in which the prefix is attached simultaneously with the reflexive *-ся/cъ*, as in *разойтись/raz-jtis* ‘walk away in different directions’, which is derived from *идти/idi* ‘walk’, even though there is no *\*идтись/idtis*.<sup>9</sup> Also, when a verb with the reflexive *-ся/cъ* differs from a non-reflexive counterpart only in terms of transitivity, the two verbs are collapsed into one entry on our lists, yielding smaller numbers than in Figure 1 in section 1.4. For example, *умыть(ся)/u-myti(sja)* ‘wash (one’s face)’ is listed as one verb, and the parentheses indicate that the reflexive *-ся/cъ* does not alter the meaning beyond making the verb intransitive.

To streamline the presentation, we sort the eleven prefixes into three groups according to the extent of overlap observed. For each group, we present one prefix in full detail and give sketches of the remaining prefixes. Two prefixes show complete overlap in all meanings: *u-* and *v-*. Here *u-* serves as our primary example. Seven prefixes show overlap in most, but not all meanings: *raz-, pri-, ot-, v(o)z-, o(b)-, vy-, iz-*. For this group we start with a full account of *raz-* followed by briefer descriptions of *pri-* and *ot-*. The four remaining prefixes in the majority overlap group present some special issues, namely: whether *v(o)z-* is one or two prefixes (*vz-* and *voz-*); whether *o(b)-* is one, two, or three prefixes (*o-, ob-,* and *obo-*); and whether *vy-* and *iz-* are related variants. All of these issues will be addressed. Two prefixes, *pere-* and *pod-*, show overlap in a minority of their meanings, and we handle the former in more detail.

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<sup>9</sup> It is possible to create forms that look like they belong to *\*идтись/idtis* in a construction that combines the dative case with the reflexive *-ся/cъ*, as in *Мне идется легко* ‘It’s easy for me to walk’.

For the three prefixes that serve as our lead examples, *u-*, *raz-*, and *pere-*, the heading is followed by a diagram that juxtaposes the radial category of the prefix based on the Specialized Perfectives with the radial category of simplex verbs that form Natural Perfectives, thus visually collapsing the two steps undertaken in the analysis. Corresponding diagrams are available for all eleven prefixes on the website ([http://emptyprefixes.uit.no/methodology\\_eng.htm](http://emptyprefixes.uit.no/methodology_eng.htm)). Each diagram shows a radial category with meanings represented as boxes. The box representing the prototype has a thicker border and there are lines connecting the boxes to represent relations among the meanings. Each box contains the following information: a numerical code for convenience (used in explanations below and on the website), the meaning in SMALL CAPS, then the type (Specialized Perfective, Complex Act Perfective, Natural Perfective) and number of verbs with that meaning, and an example for each verb type with a gloss. Shading is used to indicate meanings associated with both Specialized (or Complex Act) Perfectives and Natural Perfectives. Thus, for example, if we look at the prototype for *u-* in Figure 2 (also a part of Figure 3), we find it has the code 1, the meaning MOVE AWAY, twenty-five Specialized Perfectives like *убежать/u-bežat'* 'run away', and five Natural Perfectives like *украсть/u-krast'* 'steal'. The box is shaded because this meaning is associated with both Specialized Perfectives and Natural Perfectives, giving evidence of overlap.

1. MOVE AWAY SP (25) <i>убежать/u-bežat'</i> 'run away' NP (5) <i>украсть/u-krast'</i> 'steal'
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**Figure 2.** Prototype of *u-*

The accompanying narrative follows the coded numbers of the meanings, which are identified with reference to Specialized Perfectives. Since the range of Complex Act Perfectives is much narrower than that of Specialized Perfectives, often this means that only Specialized Perfectives are attested. We observe Complex Act Perfectives formed by only three of our eleven prefixes: *ot-*, *pri-*, and *pod-*. Once the radial category of the prefix is established, we then explore the extent

to which its meanings overlap with the meanings of the simplex verbs in Natural Perfectives.

The meaning of a prefix is contrastive in relation to the simplex verb in Specialized and Complex Act Perfectives. In other words, a Specialized or Complex Act Perfective has a different meaning than the corresponding simplex verb. In order to make this contrast clear for the reader, when Specialized and Complex Act Perfectives are cited, the simplex verb and its gloss are also given in parentheses. Here are two examples of Specialized Perfectives and how they are cited: *убежать/u-bežat'* 'run away' (*бежать/bežat'* 'run') and *раздуть/raz-dut'* 'inflate' (*дуть/dut'* 'blow'). The simplex verbs are not given for Natural Perfectives because they have the same meaning as the perfectives, so listing them would be redundant, as we see in *украсть/u-krast'* 'steal' (*кraстъ/krast'* 'steal') and *распухнуть/raz-puxnut'* 'swell' (*пухнуть/puxnut'* 'swell').

It is sometimes possible to argue that a given verb could be classified differently. Indeed the radial category model of meaning predicts that there can be gradient transitions and multiple associations. Still, such adjustments would not change the overall outcome of the analysis, which is based on over two thousand verbs. We do represent some multiple associations in the analysis, which means that the numbers of verbs in the boxes might not add up to the total numbers given in the heading. For example, the Natural Perfective *уаковать/u-pakovat'* is listed both under PLACE/FIT in its meaning 'pack up' and under COVER COMPLETELY in its meaning 'wrap up'.

Shading in the figures highlights the overlap between the meanings of the prefixes and the meanings of the base verbs in Natural Perfectives. Shaded boxes show those meanings where we observe both Specialized Perfectives (or sometimes Complex Act Perfectives) and Natural Perfectives. Boxes that are not shaded represent meanings that we find only in Specialized or Complex Act Perfectives. In the diagram in Figure 3, all the boxes are shaded because there is 100% overlap between the meanings of the prefix *u-* and the meanings of the simplex verbs it combines with to form Natural Perfectives. In Figure 4, all but one of the boxes are shaded, since we see overlap in all the meanings of *raz-* but one. The radial category for *pere-* in Figure 5 has five out of eleven of its boxes shaded because six of the meanings are found only in association with Specialized Perfectives.

Only the analyses of *u-*, *raz-*, and *pere-* are presented in the expanded format described above. The remaining analyses are presented in an abbreviated format, without a diagram and grouping the Specialized (and Complex Act) Perfectives together with the Natural Perfectives for each meaning. Diagrams and full lists of verbs for the remaining prefixes are available on the website ([http://emptyprefixes.uit.no/methodology\\_eng.htm](http://emptyprefixes.uit.no/methodology_eng.htm)).

## 2.4. Prefixes with Complete Semantic Overlap: *u-* and *v-*

These two prefixes show overlap between the meanings of the prefixes and the meanings of simplex verbs in all meanings in their networks.

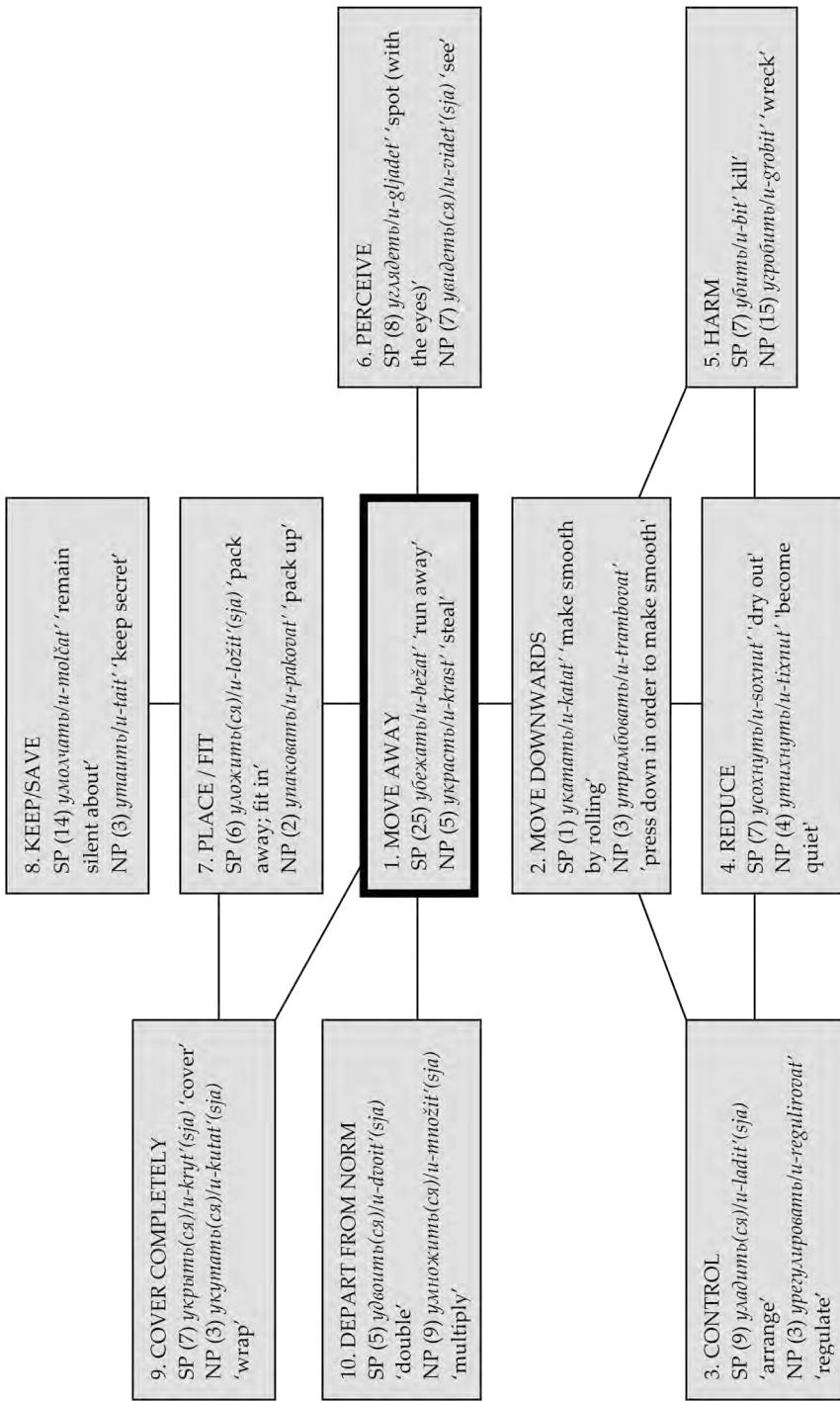
### 2.4.1. *u-* MOVE AWAY

The radial category in Figure 3 is based on analysis of eighty-nine Specialized Perfectives, as detailed on page 31. The prototypical meaning, MOVE AWAY, is at once highly concrete in reference to verbs in that meaning, and also more general in relation to the other meanings of *u-*. In this radial category we see two clusters of meanings: 2–5 and 7–9. Meanings 2–5 relate movement away to movement downward, motivated by the fact that objects shrink and sink below the horizon as they move further away.<sup>10</sup> Downward movement can follow various vertical scales in human experience, such as CONTROL IS UP vs. CONTROLLED IS DOWN (CONTROL), MORE IS UP vs. LESS IS DOWN (REDUCE), and GOOD IS UP vs. BAD IS DOWN (HARM).<sup>11</sup> The second cluster focuses on reduced accessibility associated with the kind of movement away that involves putting things away. Thus objects become more controlled and organized (PLACE/FIT), or are in a state of being kept away (KEEP/SAVE) or

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<sup>10</sup> Nesset (2010) and Zaliznjak (2006) suggest this link between ‘away’ and ‘down’ in the meanings of *u-* and note that there is a parallel in the prefix *s-*, which can also signal both, as in *сбежать/s-bežat'* из дома/с горы ‘run away from the house/run down from the mountain’.

<sup>11</sup> These metaphors are identified by Lakoff and Johnson (1980: 15–16). Zaliznjak (2006: 344) corroborates the CONTROL metaphor for Russian as “an extension of movement downward, motivated by the idea of the victory of the subject over the object, bringing the latter into a state of subordination to the subject.”

Figure 3. Radial Category for the Prefix *u-*

can be made inaccessible by being wrapped up (COVER COMPLETELY). Two more meanings are directly related only to the prototype: the PERCEIVE meaning involves a subject directing attention away to an object, and the DEPART FROM NORM meaning involves a change that increases distance along a scale.

Our analysis focuses first on the eighty-nine Specialized Perfectives and their distribution across all the meanings of *u-*. We take up each meaning in turn below.

### 1. MOVE AWAY

As we will see in the remaining prefixes, the Russian verbs of motion dominate the Specialized Perfectives in the prototypical meaning.<sup>12</sup> Twelve of the verbs of motion are found here, and all have the added meaning 'away'; here are some examples: *убежать/u-bežat'* 'run away' (*бежать/bežat'* 'run'), *уехать/u-exat'* 'ride away' (*ехать/exat'* 'ride'), *уйти/u-jti* 'walk away' (*идти/idiți* 'walk'), *улететь/u-letet'* 'fly away' (*лете́ти/letet'* 'fly'). Example (1) gives an example of usage:

- (1) *Она покачала головой, потом вырвалась от него, и убежала/u-bežala.*<sup>13</sup>  
 'She shook her head, broke free from him, and ran away.'

Unsurprisingly, other verbs that denote motion are also found in this meaning, such as *ускакать/u-skakat'* 'gallop away' (*скакать/skakat'* 'gallop') and *умчаться/u-mčat'sja* 'rush away' (*мчаться/mčat'sja* 'rush'). Objects can also be removed from view, as in *убрать(sя)/u-brat'(sja)* 'remove; tidy up' (*брать(sя)/brat'(sja)* 'take') and *упрятать/u-prjatat'* 'hide away' (*прятать/prjatat'* 'hide'), and some verbs apply only to certain objects such as dirt and moisture in *умыть(sя)/u-*

<sup>12</sup> The Russian linguistic tradition recognizes a closed class of verbs of motion, defined as those verbs having both determinate (unidirectional) and indeterminate (multidirectional) stems. There are fourteen such verbs (listed here only with their determinate stems, with the more frequent verbs first): *идти/idiți* 'walk', *ехать/exat'* 'ride', *бежать/bežat'* 'run', *лететь/letet'* 'fly', *плыть/plyt'* 'swim, sail', *ползти/polzti* 'crawl', *нести/nesti* 'carry', *вести/vesti* 'lead', *везти/vezti* 'convey', *гнать/gnat'* 'drive, chase', *тащить/taščit'* 'drag', *лезть/lezt'* 'climb', *бредти/bresti* 'wander', *катить/katit'* 'roll' (Timberlake 2004: 412–15).

<sup>13</sup> [Василий Аксенов. Звездный билет // «Юность», № 6, 1961]

*myt'(sja)* ‘wash off’ (*мыть(ся)/myt'(sja)* ‘wash’) and *утереть(ся)/u-teret'(sja)* ‘wipe off’ (*тереть/teret'* ‘rub’). Finally, *уделить/u-delit'* ‘give, spare, devote’ (*делить/delit'* ‘divide’) is formed on the logic that possessions must be divided up in order to be allocated and thus MOVED AWAY to new possessors. As we will see, this verb is particularly close to the Natural Perfectives in this meaning.

## 2. MOVE DOWNWARDS

This meaning links the prototype to the cluster of meanings with vertical scales and is illustrated by the Specialized Perfective *укатать/u-katat'* ‘make smooth by rolling’ (*катать/katat'* ‘roll’), which involves compression in the downward movement, as in:

- (2) *При замене труб вскрывают дорожное покрытие, а потом требуется оплатить работу дорожной организации, чтобы те все засыпали и укатали/u-katali цементом.<sup>14</sup>*

‘When changing the pipelines, they open up the surface of the road and then it is necessary to pay the road construction firm so that they will cover it up with cement and **roll it smooth**.’

## 3. CONTROL

The CONTROL group is populated by verbs that receive a meaning of gaining control or calming down when *u-* is added. For example, *уговорить/u-govorit'* ‘persuade’ (*говорить/govorit'* ‘speak’) and *упросить/u-prosit'* ‘prevail upon’ (*просить/prosit'* ‘ask’) both describe a situation in which one person gets another to believe or do what they want. Example (3) illustrates the use of *утешить/u-tešit'* ‘comfort, calm down’ (*тишить/tešit'* ‘amuse, entertain’):

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<sup>14</sup> [Нина Леонтьева. Отмороженная власть (2003) // «Советская Россия», 2003.04.08]

- (3) *И я понял, что надо писать текст не для читателя, не для публики, а для этих родственников погибших — надо написать такой материал, который бы их утешил/u-teşil.*<sup>15</sup>
- 'And I understood that I had to write a text not for the reader, not for the public, but for the relatives of the deceased, that I had to write the kind of material that would **comfort** them.'

#### 4. REDUCE

This group is linked to CONTROL in that reduction of energy can also have a calming effect. *Умерить/u-merit'* 'moderate' (*мерить/merit'* 'measure'), for example, signals reduction in measure, which can also be interpreted as gaining control, as in (4):

- (4) *Похоже, она намекала отцу, чтобы он умерил/u-meril рвение.*<sup>16</sup>
- 'It seems that she indicated to her father that he should **moderate** his zeal.'

*Быть/byt'* is the generic verb 'be' in Russian, but *убыть/u-byt'* means 'decrease'. We also find verbs of physical impact, such as *урезать/u-rezat'* 'cut down, reduce' (*резать/rezat'* 'cut') and *усечь/u-seč'* 'truncate' (*сечь/seč'* 'cut, chop').

#### 5. HARM

Reduction in functionality relates HARM to REDUCE. The Specialized Perfectives in this group have meanings of killing *убить/u-bit'* 'kill' (*бить/bit'* 'beat'), harming *яззвить/u-jazvit'* 'wound' (*язвить/jazvit'* 'sting'), and exhausting *утомить/u-tomit'* 'wear out' (*томить/tomit'* 'tire'), as in (5):

- (5) *Чувство вины и неловкости меня вконец утомило/u-tomilo.*<sup>17</sup>
- 'The feeling of guilt and awkwardness completely **wore me out**.'

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<sup>15</sup> [Д. Соколов. Нет больше сил терпеть безнадегу (2002) // «Витрина читающей России», 2002.10.25]

<sup>16</sup> [Владимир Шаров. Воскрешение Лазаря (1997–2002)]

<sup>17</sup> [Владимир Брагин. В стране дремучих трав (1962)]

### **6. PERCEIVE**

Verbs in this group involve the discovery of something that is made possible by directing the attention away toward some object. Example (6) illustrates *углядеть/u-gljadet'* 'spot (with the eyes)' (*глядеть/gljadet'* 'look at'):

- (6) *И Хиллари Родхем Клинтон углядела/u-gljadela в неопрятном студенце-тюфяке потенциал.*<sup>18</sup>  
 'And Hillary Rodham Clinton **spotted** the potential in the disheveled wimpy student.'

Though this group is dominated by verbs of visual perception, it is possible to discover something with other senses, as we see in *учуять/u-čujat'* 'smell something out' (*чуять/čujat'* 'smell'). We also have verbs with more general meanings, like *уловить/u-lovit'* 'detect' (*ловить/lovit'* 'try to catch') and *узнать/u-znat'* 'recognize, find out' (*знать/znat'* 'know').

### **7. PLACE/FIT**

This meaning involves putting something or someone away, in a container or in a more settled state, where the object is under better control and may also be less accessible. *Уложиться/u-ložit'* 'pack away, put to bed' (*кладь/klast'* 'lay') and *усадить/u-sadit'* 'seat' (*сажать/sažat'* 'seat')<sup>19</sup> combine all of these characteristics and can refer to both objects and people, as we see in these examples:

- (7) a. *Наконец гитарист закончил игру. Совсем закончил.*  
*Показывая это, он уложил/u-ložil гитару в футляр.*<sup>20</sup>  
 'Finally the guitarist finished playing. He was done. In order to show this, he **put** his guitar **away** in its case.'

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<sup>18</sup> [Клариса Пульсон. Книги (2003) // «Карьера», 2003.11.01]

<sup>19</sup> Russian verbs of position have irregular stem variation.

<sup>20</sup> [Алексей Слаповский. Гибель гитариста (1994–95)]

- (7) b. Ирина *усадила/u-sadila* внучку за стол и стала подкладывать лучшие кусочки.<sup>21</sup>

'Irina seated her granddaughter at the table and started laying out the best treats.'

*Устроить(cя)/u-stroit'(sja)* 'arrange, settle down' (*строить(cся)/stroit'(sja)* 'build') involves organizing and setting things up so that all the needed pieces are in place, as we see in phrases like *устроить/u-stroit'* сына в университет 'get one's son into university' and *устроиться/u-stroit'sja* на работу 'get a job'.

#### 8. KEEP/SAVE

Verbs in this group refer to a state that can result from dynamic acts described in the group above. *Усидеть/u-sidet'* 'remain sitting' (*сидеть/sidet'* 'sit') is a static version of *усадить/u-sadit'* 'seat' cited under PLACE/FIT. Both meanings imply a force that is directed away, opposing some activity, thus holding something back.

- (8) Гуля кое-как *усидела/u-sidela* в седле и снова направила коня вперёд.<sup>22</sup>

'Somehow Gulja managed to stay seated in the saddle and directed the horse forward again.'

This meaning is additionally connected to the lack of access entailed by movement away, as in *умолчать/u-molčat'* 'remain silent about' (*молчать/molčat'* 'be silent'), as in this example:

- (9) Ты *умолчал/u-molčal*, что в том же вечер, после этого разговора, она была убита.<sup>23</sup>

'You were silent about the fact that she was killed on that same evening, after that conversation.'

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<sup>21</sup> [Токарева Виктория. Своя правда // «Новый Мир», № 9, 2002]

<sup>22</sup> [Елена Ильина. Четвертая высота (1945)]

<sup>23</sup> [Надежда Трофимова. Третье желание // «Звезда», 2003]

### **9. COVER COMPLETELY**

Covering an object removes it from visible access. Here we find Specialized Perfectives denoting the placing of objects on others, such as *увшатъ/u-vešat'* ‘cover by hanging objects’ (*вешать/vešat'* ‘hang’), *усыпать/u-sypat'* ‘cover by strewing’ (*сыпать/sypat'* ‘strew’), and *укрыть/u-kryt'* ‘cover up, give shelter’ (*крыть/kryt'* ‘cover’).

- (10) *Пока шел урок, я потихоньку оборвала все шипы, которые усыпали/u-sypali рядом со мной весь пол.*<sup>24</sup>  
 ‘During the lesson I quietly tore off all the rose-thorns, which **covered** the floor all around me.’

### **10. DEPART FROM NORM**

In this meaning, a norm is a standard that one “moves away” from. This involves either an exceptional act or verbs that mean ‘make X be Y or Yer’. The exceptional acts involve being more clever than usual, as in *ухитриться/u-xitrit'sja* (*хитрить/xitrit'* ‘use cunning’) and *умудриться/u-mudrit'sja* (*мудрить/mudrit'* ‘complicate matters’), both of which mean ‘to manage to do something by being very clever’. Such verbs are usually used ironically, as in example (11):

- (11) *Девушка принесла бокалы, и пока рассставляла их, умудрилась/u-mudrila's' три бокала разбить.*<sup>25</sup>  
 ‘The girl brought the goblets and while she was setting them out, she **was so clever that she managed** to break three of them.’

The second type of verbs in this group involves taking something further along on some scale, and thus farther away from where it started.<sup>26</sup> This includes verbs like *удвоить(sя)/u-dvoit'(sja)* ‘double, reduplicate’ (*двоить(sя)/dvoit'(sja)* ‘divide in two, appear double’) and *участиться/u-častit'sja* ‘become more frequent, quicken’ (*частить/častit'* ‘do something rapidly or frequently’), as illustrated here:

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<sup>24</sup> [Лидия Вертинская. Синяя птица любви (2004)]

<sup>25</sup> [Едальня «Прогноз погоды» (форум)« (2007)]

<sup>26</sup> Linguists often refer to these verbs as “factitives” (Townsend 1975: 143–44).

- (12) *Ощущение скучки мигом исчезло, Марго почувствовала, как участился/u-častilsja пульс.*<sup>27</sup>  
 ‘The feeling of boredom disappeared in an instant and Margo felt that her pulse quickened.’

This completes our tour of the Specialized Perfectives prefixed in *u-* and their radial category. What remains is to inspect the fifty-four simplex verbs that form their Natural Perfectives with *u-* for evidence of overlap. We find that all of these verbs have meanings that are consistent with the meanings of *u-*’s radial category. Recall that there is no need to cite the simplex verb alongside a Natural Perfective since the meaning is by definition the same.

In the MOVE AWAY meaning, we find verbs that involve the removal of possessions to a new possessor or location, namely by theft, as in *украсть/u-krast'* ‘steal’; by loss as in *утеряты(sя)/u-terjat'(sja)* ‘lose’; or by some other transaction, as in *уплатить/u-platit'* ‘pay’, and *унаследовать/u-nasledovat'* ‘inherit’:

- (13) *У отца Томаса был совершенно изумительный бас-баритон, и сын его унаследовал/u-nasleoval.*<sup>28</sup>  
 ‘Tomas’s father had a completely wonderful bass-baritone voice, and the son **inherited** it.’

Natural Perfectives with the MOVE DOWNTWARDS meaning are *утрамбовать/u-trambovat'* ‘press down to make smooth’, *упасты/u-past'* ‘fall’, and *уронить/u-ronit'* ‘drop’:

- (14) *Тогда он уронил/u-ronil свою сигарету, а я взял и поднял.*<sup>29</sup>  
 ‘Then he **dropped** his cigarette and I went and picked it up.’

Three Natural Perfectives denote CONTROL: *урегулировать/u-regulirovat'* ‘regulate’, *упокоить/u-pokoit'* ‘calm someone down’, and *убаюкать/u-bajukat'* ‘lull to sleep’:

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<sup>27</sup> [Наль Подольский. Книга Легиона // «Октябрь», 2001]

<sup>28</sup> [Сати Спивакова. Не всё (2002)]

<sup>29</sup> [Андрей Геласимов. Нежный возраст (2001)]

- (15) Монотонно-отдаленный шум работы станков постепенно *убаюкал/u-bajukal*, и Савелий задремал...<sup>30</sup>

'The distant monotonous noise of the industrial machines gradually **lulled** him and Savelij dozed off.'

REDUCE is manifested in Natural Perfectives referring to lights and sounds that go out, as in *угасить/u-gasit'* 'put out the light', *угаснуть/u-gasnut'* 'go out (of fire)', *утихнуть/u-tixnut'* 'become quiet', and *умолкнуть/u-molknut'* 'fall silent':

- (16) И был рад, что обратил на себя внимание, но тут же *умолк/u-molk*, не зная, что ещё сказать.<sup>31</sup>

'He was glad that he had drawn attention to himself, but then he **fell silent**, not knowing what more to say.'

HARM is the meaning that is most strongly represented among the Natural Perfectives, where we find fifteen of them, all denoting various kinds of injury or destruction, as in *утонуть/u-tonut'* 'sink, drown', *увянуть/u-vjanut'* 'whither', and *удушить/u-dušit'* 'strangle':

- (17) Югов обиделся и ударом кулака сбил тетку наземь, схватил за горло и *удушил/u-dušil*.<sup>32</sup>

'Jugov took offence, knocked the lady down with his fist, grabbed her throat and **strangled** her.'

Like their counterparts among the Specialized Perfectives, Natural Perfectives in the PERCEIVE meaning express perceptual or conceptual experiences focused on an object, as in *уразуметь/u-razumet'* 'comprehend', *услышать(sя)/u-slyšat'(sja)* 'hear', and *увидеть(sя)/u-videt'(sja)* 'see':

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<sup>30</sup> [Виктор Доценко. Срок для Бешеного (1993)]

<sup>31</sup> [Олег Павлов. Карагандинские девятины, или Повесть последних дней // «Октябрь», № 8, 2001]

<sup>32</sup> [Анатолий Приставкин. Долина смертной тени (1999) // «Дружба народов», 1999.09.15]

- (18) *Когда я увидела/i-videla его в первый раз, он совершенно мне не понравился.<sup>33</sup>*  
 ‘The first time I **saw** him I didn’t like him at all.’

In the PLACE/FIT meaning we find two Natural Perfectives: *укомплектовать/i-komplektovat’* ‘complete with all necessary parts’ and *упаковать/i-pakovat’* ‘pack up’.

- (19) *Продавщица упаковала/i-pakovala им продукты в пакет, и они вышли из магазина.<sup>34</sup>*  
 ‘The saleslady **packed up** their groceries in a bag and they exited the store.’

Natural Perfectives reflect both static positions and secrecy in the KEEP/SAVE meaning, as we see in *увязнуть/i-vjaznut’* ‘be stuck’ and *утаить/i-tait’* ‘keep secret’:

- (20) *Если матери известно о преступлении подонка и она утаила/i-taila это от милиции, она — сама преступница.<sup>35</sup>*  
 ‘If the mother knows about her brat’s crime and **has kept it secret** from the police, then she is herself a criminal.’

In the COVER COMPLETELY meaning we find three Natural Perfectives: *упаковать/i-pakovat’*, this time in its ‘wrap’ meaning, and the synonymous *укутать(ся)/i-kutat’(sja)*, plus *умотать/i-motat’* ‘reel, wind’:

- (22) *Я посадил ее в санки, укутал/i-kutal ноги шубой.<sup>36</sup>*  
 ‘I seated her in the sled and **wrapped** her feet in a fur coat.’

Finally, both subgroups of the DEPART FROM NORM meaning are represented among Natural Perfectives, where we have verbs de-

<sup>33</sup> [Я желанна. Разве это стыдно? // «Даша», № 10, 2004]

<sup>34</sup> [Андрей Житков. Супермаркет (2000)]

<sup>35</sup> [Нина Катерли. Дневник сломанной куклы // «Звезда», 2001]

<sup>36</sup> [Михаил Шишкян. Всех ожидает одна ночь (1993–2003)]

noting unusual action, like *учудить/u-čudit'* 'act in a strange way' and verbs that bring an item further along a scale, like *устареть/u-staret'* 'grow old, become obsolete':

- (23) *Вы же помните, что он **учудил/u-čudil** на прошлой неделе: отдал двухсотдолларовую кожаную куртку за две ста рублей.*<sup>37</sup>  
 'Surely you remember that **strange thing** he **did** last week: he gave away a two-hundred dollar leather jacket for two hundred rubles.'
- (24) *Несмотря на все технические ухищрения, автомобиль за 32 года безнадежно **устарел/u-starel.***<sup>38</sup>  
 'Despite all the technical gimmicks, the automobile **has become** hopelessly **obsolete** after 32 years.'

To summarize, we see that the meanings of the verbs that form Natural Perfectives in *u-* cover all the meanings of the prefix that we find among the Specialized Perfectives. Because the meanings of the prefixes and the meanings of the simplex verbs match, we have evidence for Corollary 1 of the Overlap Hypothesis. A similar pattern is found for *v-*, which we take up next.

#### 2.4.2. *v-* INTO

*V-* has a minimal radial category, consisting of only one meaning, INTO, with fifty Specialized Perfectives, including ten built from verbs of motion, such as *вбежать/v-bežat'* 'run into' (*бежать/bežat'* 'run') and *влететь/v-letet'* 'fly into' (*лететь/letet'* 'fly'). Other verbs describe activities that can be used to effect insertion, such as *вставить/v-stavit'* 'insert' (*ставить/stavít'* 'place, make stand'), *вписать/v-pisat'* 'insert in text' (*писать/pisat'* 'write'), and *влепнуть/v-lipnut'* 'get stuck in' (*лепнуть/lipnut'* 'stick'). Some verbs relating to substances acquire the meaning of absorption and mixing when prefixed in *v-*, as in *впитать/v-pitat'* 'absorb' (*питать/pitát'* 'feed'), *всосать/v-sosat'* 'absorb' (*сосать/sosat'* 'suck'), and *влить/v-lit'* 'pour into' (*лить/lit'* 'pour').

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<sup>37</sup> [Максим Милованов. Рынок тщеславия (2000)]

<sup>38</sup> [Анатолий Фомин. УАЗ еще раз (2004) // «За рулем», 2004.04.15]

With perception verbs *v-* indicates that one has entered deeply into something with one's senses or one's mind, as in *вслушаться/v-slušat'sja* 'listen attentively to' (слушать/slušat' 'listen'), *всмотреться/v-smotret'sja* 'look closely at' (смотреть/smotret' 'watch'), and *вдуматься/v-dumat'sja* 'ponder' (думать/dumat' 'think'). Getting involved with other people is expressed by verbs like *ввязаться/v-vjazat'sja* 'get involved' (вязать(sя)/vjazat'(sja) 'tie'), and *вмешаться/v-mešat'sja* 'intervene' (мешать/mešat' 'mix, interfere'). The two Natural Perfectives formed with *v-* include one from the simplex verb *колоть/kolot'* in its meaning 'inject', producing *вколоть/v-kolot'* 'inject', and *впутать(sя)/v-putat'(sja)* 'involve somebody in an unpleasant situation', which follows the model of the verbs of involvement noted above.

#### **2.4.3. *u-* and *v-* and Corollary 1 of the Overlap Hypothesis**

The meanings of the simplex verbs that form Natural Perfectives with the prefixes *u-* and *v-* overlap with all of the meanings of these two prefixes. This pattern of overlap gives strong support for Corollary 1 of the Overlap Hypothesis.

#### **2.5. Prefixes with Majority Semantic Overlap: *raz-*, *pri-*, *ot-*, *v(o)z-*, *o(b)-*, *vy-*, *iz-***

Whereas we find complete overlap between the meanings of prefixes and of simplex verbs for *u-* and *v-*, there are seven prefixes for which the overlap involves the majority of meanings, excluding only one or two meanings that are not compatible with the formation of Natural Perfectives.

##### **2.5.1. *raz-* APART**

The radial category in Figure 4 (on page 43) is based on analysis of 148 Specialized Perfectives. The prototypical meaning of *raz-*, APART, involves breaking up the unity of either a group or an object, such that individuals or parts go their separate ways. The link between APART and CRUSH is motivated by the fact that when something is crushed, its

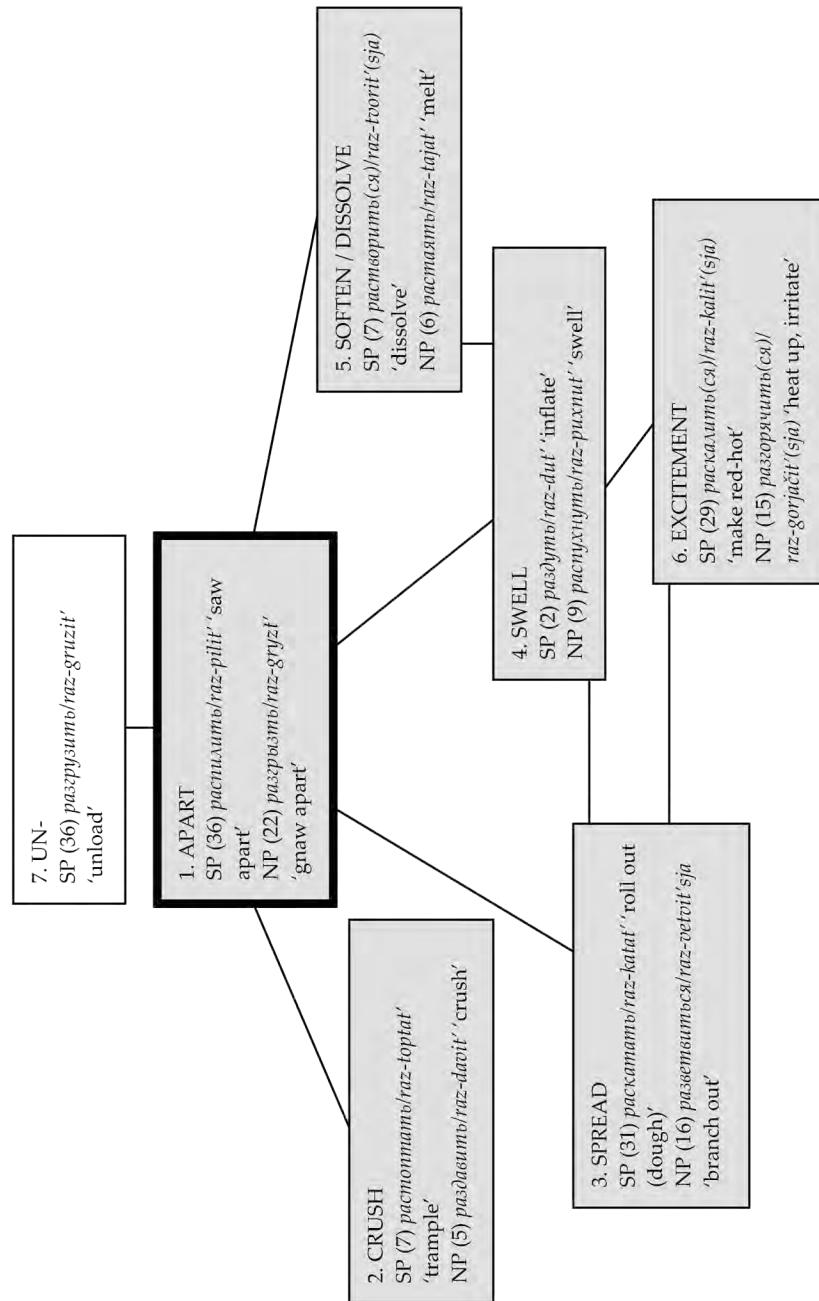


Figure 4. Radial Category for the Prefix *raz-*

internal structure is destroyed (taken APART) and the edges may move outward. There is a cluster of meanings (3–6) that focus on the dispersal that is inherent in APART, yielding SPREAD, SWELL, and SOFTEN/DIS-SOLVE. Because excitement tends to spread and things that are excited often swell, we also have a meaning of EXCITEMENT in this cluster. At the top of the radial category the final meaning is UN-, which is related to the prototype in that undoing something is a kind of taking APART. If you load furniture into a truck, when you unload the furniture, you are taking apart the load. Except for this last meaning, all of the boxes in Figure 4 are shaded, indicating that we find both Specialized Perfectives and Natural Perfectives in the majority of the radial category, and thus majority overlap. It is easy to see why there are no Natural Perfectives in the UN- meaning. A Natural Perfective is by definition a verb that has the same meaning as the corresponding simplex verb. In the UN- meaning, *raz-* creates prefixed perfectives that have the opposite meaning of the simplex verbs. This clash makes it impossible to form Natural Perfectives from *raz-* in this meaning.

We commence by going through the meanings of *raz-* one by one and describing how the Specialized Perfectives give evidence for each meaning.

### **1. APART**

Eleven of the thirty-six verbs in the prototypical meaning are verbs of motion. For verbs that signal moving oneself, the reflexive *-ся/сь* is also attached, and the verbs entail several people or other subjects that move away from each other, breaking up a group, as in *разбежаться/raz-bežat'sja* 'run away in different directions' (*бежать/bežat'* 'run') and *разлететься/raz-letet'sja* 'fly away in different directions' (*лете́ть/letet'* 'fly'), illustrated in example (25). For verbs that signal moving other objects, the Specialized Perfectives describe dispersing a number of objects to various locations, as in *разнести/raz-nesti* 'deliver to different places, disperse' (*нести/nesti* 'carry') and *развезти/raz-vezti* 'deliver to different places by vehicle' (*везти/vezti* 'convey'), illustrated in example (26).

- (25) *Шлиппенбах захохотал так, что разлетелись/raz-letelis' бумажные салфетки.*<sup>39</sup>  
 ‘Schlippenbach started to laugh so hard that the paper napkins **flew in all directions.**’
- (26) *После поминального обеда «таксист по лицензии» развез/raz-vez всех по домам.*<sup>40</sup>  
 ‘After the memorial dinner, the “designated driver” **drove** everyone to their homes.’

Also in this meaning we see movements that can be used to scatter things, as in *разметать/raz-metat'* ‘scatter’ (*метать/metat'* ‘throw’), *разослать/raz-slat'* ‘distribute’ (*слать/slat'* ‘send’), as well as verbs involving damage, as in *распилить/raz-pilit'* ‘saw apart’ (*пишить/pilit'* ‘saw’), *распрескаться/raz-treskat'sja* ‘crack apart’ (*прескаться/treskat'sja* ‘crack’). We also find here verbs that refer to behaviors people engage in when parting, as in *раскланяться/raz-klanjat'sja* ‘exchange bows on leaving’ (*кланяться/klanjat'sja* ‘bow’) and *распрощаться/raz-proščat'sja* ‘take final leave’ (*прощаться/proščat'sja* ‘say good-bye’).

## 2. CRUSH

CRUSH focuses on destruction of internal structure, although edges may move apart. Specialized Perfectives in this meaning are mainly built from verbs describing violent actions, as in *раздолбать/raz-dolbat'* ‘pound flat’ (*долбать/dolbat'* ‘pound’), *растоптать/raz-toptat'* ‘trample’ (*топтать/toptat'* ‘stamp one’s feet’), and *разбомбить/raz-bombit'* ‘bomb flat’ (*бомбить/bombit'* ‘bomb’).

- (27) *Миша докурил сигарету до самого фильтра, и яростно растоптал/raz-toptal ее каблуком.*<sup>41</sup>  
 ‘Misha smoked his cigarette all the way down to the filter and furiously **crushed** it with his heel.’

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<sup>39</sup> [Сергей Довлатов. Чемодан (1986)]

<sup>40</sup> [Виктор Слипенчук. Зинзивер (2001)]

<sup>41</sup> [Евгений Прошкин. Механика вечности (2001)]

### 3. SPREAD

In this meaning the edges move apart, but without any destruction. Many of the verbs that build Specialized Perfectives in this meaning describe the manipulation of spreadable substances like liquids, dough, and cloth: *раскрасить/raz-krasit'* 'paint all over' (*красить/krasit'* 'paint'), *раскатать/raz-katat'* 'roll out (dough)' (*катать/katat'* 'roll'), and *расстелить/raz-stelit'* 'spread out (a cloth)' (*стелить/stelit'* 'lay (a cloth)').

- (28) *Раскатала/raz-katala* тесто, поставила пирог в духовку, и  
тут позвонили в дверь...<sup>42</sup>

'She **rolled out** the dough, put the pie in the oven, and right then someone rang the doorbell...'

Other types of actions can cause groups of objects to spread, such as *разрастись/raz-rastis'* 'spread by growing' (*растти/rasti* 'grow'), and *разрекламировать/raz-reklamirovat'* 'publicize all over' (*рекламировать/reklamirovat'* 'advertize'). Since writing involves placing symbols on a surface and painting spreads an image across a surface, we get *расписаться/raz-pisat'* 'enter figures into an accounting book, paint all over' (*писать/pisat'* 'write, paint'), which also means 'elaborate on a description with details'. Given that elaboration is a kind of spreading, we find some more generalized verbs in this vein, such as *развить(ся)/raz-vit'(sja)* 'expand, develop' (*вить/vit'* 'twist') and *разработать/raz-rabotat'* 'work out, elaborate' (*работать/rabotat'* 'work').

- (29) Я *разработал/raz-rabotal* стратегический план, который вам  
станет ясен впоследствии.<sup>43</sup>

'I **have worked out** a strategic plan, which will subsequently become clear to you.'

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<sup>42</sup> [Симон Соловейчик. Ватага «Семь ветров» (1979)]

<sup>43</sup> [Владимир Войнович. Иванькиада, или рассказ о вселении писателя Войновича в новую квартиру (1976)]

#### 4. SWELL

Swelling can involve physical enlargement, in *раздуть(ся)/raz-dut'(sja)* ‘inflate’ (*дуть/dut'* ‘blow’), and the expansion of one’s worth, in *разжиться/raz-žit'sja* ‘get rich’ (*жить/žit'* ‘live’).

- (30) *Неожиданно порыв так раздул/raz-dul ее юбку, что мне показалось — она вот-вот взлетит, прежде чем я успею подойти.*<sup>44</sup>
- ‘A gust of wind unexpectedly **inflated** her skirt and it seemed that she would fly away before I managed to approach her.’
- (31) *Да, народ разжился/raz-žilsja деньгами и оброс торговыми центрами, но все равно в массе своей лишних денег у людей нет.*<sup>45</sup>
- ‘Yes, the nation **has gotten rich** with money and sprouted shopping malls, but still in general people don’t have extra money.’

#### 5. SOFTEN/DISSOLVE

In this meaning a substance loses its internal cohesion, and expands or is distributed. Specialized Perfectives here include verbs like *размять(ся)/raz-mjat'(sja)* ‘soften up (from kneading)’ (*мять(sja)/mjat'(sja)* ‘press’), *размыть/raz-myti* ‘erode’ (*мыть/myt'* ‘wash’), and *расстворить(ся)/raz-tvorit'(sja)* ‘dissolve’ (*творить/tvorit'* ‘make, create’).

- (32) *Река размыла/raz-myta почти половину холма, однако сохранившаяся часть занимает площадь больше одного гектара.*<sup>46</sup>
- ‘The river **eroded away** nearly half the hill, but the part that remains covers more than one hectare.’

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<sup>44</sup> [Фазиль Искандер. Созвездие Козлотура (1966)]

<sup>45</sup> [Владимир Ляпоров. Контракт нерезидента (2004) // «Бизнес-журнал», 2004.03.03]

<sup>46</sup> [Н. Бадер. У истоков земледелия // «Наука и жизнь», 1979]

## 6. EXCITEMENT

Specialized Perfectives with concrete uses tend to involve heating, as in *разогреть(ся)/raz-gret'(sja)* ‘warm up’ (*греть/gret'* ‘radiate heat’) and *раскалить(ся)/raz-kalit'(sja)* ‘make red-hot’ (*калить/kalit'* ‘heat, roast’). Metaphorical uses tend to refer to human emotions and associated behaviors, as in *развеселить(ся)/raz-veselit'(sja)* ‘amuse’ (*веселить(ся)/veselit'* ‘entertain’), *развлечь(ся)/raz-volnovat'(sja)* ‘upset’ (*волновать(ся)/volnovat'* ‘worry’), and *расплакаться/raz-plakat'sja* ‘burst into tears’ (*плакать/plakat'* ‘cry’).

- (33) Зинаида Николаевна поставила хрустальные рюмки, нарезала сыр, колбасу, **разогрела/raz-grela** в духовке французский батон.<sup>47</sup>  
 ‘Zinaida Nikolaevna set out the crystal glasses, cut up the cheese and sausage, and **heated up** the French baguette in the oven.’
- (34) Сердце застучало. Я чутъ не **расплакался/raz-plakalsja**.<sup>48</sup>  
 ‘My heart started to pound. I almost **burst into tears**.’

## 7. UN-

Many Specialized Perfectives in this meaning are built from simplex verbs that mean putting things together, a process which is thus reversed in examples like *развязать(ся)/raz-vjazat'(sja)* ‘untie’ (*вязать/vjazat'* ‘tie’), *разлепить/raz-lepit'* ‘unstick’ (*лепить/lepit'* ‘stick’), and *разъединить(ся)/raz-edinit'(sja)* ‘disconnect’ (*единить/edinit'* ‘unite’).

- (35) **Развязала/raz-vjazala** веревки, которыми были спущены его руки и ноги.<sup>49</sup>  
 ‘She **untied** the ropes that bound his hands and feet.’

Other types of undoing include *разгрузить/raz-gruzit'* ‘unload’ (*згрузить/gruzit'* ‘load’) and *расшифровать/raz-šifrovat'* ‘decipher’ (*шифровать/šifrovat'* ‘encipher’). Metaphorical uses involve a new perspective,

<sup>47</sup> [Ольга Новикова. Женский роман (1993)]

<sup>48</sup> [Григорий Горин. Иронические мемуары (1990–98)]

<sup>49</sup> [Татьяна Тронина. Никогда не говори «навсегда» (2004)]

as in *раздумать/raz-dumat'* ‘change one’s mind’ (*думать/dumat'* ‘think’) and *расхотеть(ся)/raz-xotet'(sja)* ‘stop wanting’ (*хотеть(ся)/xotet'(sja)* ‘want’). *Рассыпать/raz-slyšat'* ‘catch (hearing)’ (*слышать/slyšat'* ‘hear’) and *рассмотреть/raz-smotret'* ‘discern (visually)’ (*смотреть/smotret'* ‘watch’) are parallel to ‘decipher’ in that they involve extracting information.

- (36) *Она рассыпала/raz-slyšala* в его голосе едва различимую хрипотицу.<sup>50</sup>

‘She **caught** in his voice a barely discernable hoarseness.’

Now that we have surveyed the radial category of *raz-* based on the Specialized Perfectives, we can compare it to the meanings of the simplex verbs that form their Natural Perfectives with the same prefix. As mentioned above, we find Natural Perfectives that correspond to all of the meanings of *raz-* except UN-.

Twenty-two simplex verbs form Natural Perfectives in the APART meaning, and these verbs describe destructive acts that necessarily result in the dispersal of multiple pieces, as in *раздробить(ся)/raz-drobít'(sja)* ‘crumble’, *распороть(ся)/raz-porot'(sja)* ‘tear apart at the seams’, and *растолочь/raz-toloč'* ‘pulverize’.

- (37) Я *распорола/raz-porola* рубашку, обычную рубашку, по швам, и каждый кусочек разгладила.<sup>51</sup>

‘I **tore apart** a shirt, an ordinary shirt, at the seams, and ironed out every piece.’

In the CRUSH meaning we find five verbs that directly denote crushing, like *раздавить/razdavit'* ‘crush’ and *расплощить/raspljuščit'* ‘flatten’. There is additionally a generalized verb of destruction in this group: *разгромить/razgromit'* ‘destroy’.

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<sup>50</sup> [Анна Берсенева. Полет над разлукой (2003–05)]

<sup>51</sup> [Лидия Смирнова. Моя любовь (1997)]

- (38) *Вот видите! – тонко воскликнул Будяев и с треском раздавил/raz-davil окурок в пепельнице.<sup>52</sup>*  
 “So you see,” Budjaev exclaimed keenly, and with a snap he **crushed** his cigarette-butt in the ashtray.’

Sixteen Natural Perfectives represent the SPREAD meaning, and these include verbs that describe concrete spreading like *расплодить(sя)/raz-plodit'(sja)* ‘multiply’. SPREAD also includes verbs for sorting things into different categories, as in *рассортовать/raz-sortirovat'* ‘sort’, as well as verbs that specify the spreading of money and information, as in *распранимать/raz-tranzirit'* ‘squander money in various places’ and *распрезонить/raz-trezzonit'* ‘spread the word, rumors’. Example (39) emphasizes the overlap, since it uses two verbs in the SPREAD meaning as if they were synonyms, the Specialized Perfective *разрастись/raz-rastis'* ‘spread by growing’ (*растуть/rasti* ‘grow’) and the Natural Perfective *разветвиться/raz-vetvit'sja* ‘branch out’:

- (39) *Если корневая система сильно разрослась/raz-roslas', хорошо разветвилась/raz-vetvila', то она подает сигнал вверх, в надземную часть.<sup>53</sup>*  
 ‘If the root system **has spread by growing** significantly, **has branched out** well, then it sends up a signal to the part [of the plant that is] above ground.’

In the SWELL meaning we find Natural Perfectives with simplex verbs that involve swelling, fattening, or surface expansion of objects, as in *распухнуть/raz-puxnut'* ‘swell’, *растолстеть/raz-tolstet'* ‘get fat’, and *распушиться/raz-pušit'* ‘make fluffy’. There is also *разбогатеть/raz-bogatet'* ‘get rich’ which refers to expansion in terms of wealth and is parallel to the Specialized Perfective *разжиться/raz-žit'sja* ‘get rich’ (*живут/žit'* ‘live’).

- (40) *Средний палец у него распух/raz-pux от удара.<sup>54</sup>*  
 ‘His middle finger **swelled up** from the blow.’

<sup>52</sup> [Андрей Волос. Недвижимость (2000) // Новый Мир, № 1–2, 2001]

<sup>53</sup> [Владимир Чуб. Что изучает наука ботаника? (1998)]

<sup>54</sup> [Сати Спивакова. Не всё (2002)]

- (41) У нас есть категория людей, которые *разбогатели/raz-bogateli* и стали миллиардерами, как у нас говорят, в одночасье.<sup>55</sup>  
 'We have a category of people who **got rich** and became billionaires in one fell swoop as we say.'

Six simplex verbs form Natural Perfectives in the SOFTEN/DISSOLVE meaning, including *размякнуть/raz-mjaknut'* 'soften', *растаять/raz-tajat'* 'melt', and *расплываться(ся)/raz-plavit'(sja)* 'liquefy (by heating)'.

- (42) Два дня сыпал снег, потом *растаял/raz-tajal*, и полил дождь.<sup>56</sup>  
 'Snow fell for two days, then it **melted**, and then rain came pouring down.'

Like the Specialized Perfectives, the Natural Perfectives in the EXCITEMENT meaning refer both to concrete excitement, as in *разбере-дить/raz-beredit'* 'irritate' and *расшевелить/raz-ševelit'* 'set into motion', and to human emotions and behaviors, as in *рассмешить/raz-smešit'* 'make someone laugh', and *рассердить(ся)/raz-serdit'(sja)* 'make angry'.

- (43) И так она оделась, но опять как-то неосторожно двинулась, *разбредила/raz-beredila* ногу и застонала.<sup>57</sup>  
 'So she got dressed, but again she somehow made a careless movement, **irritated** her foot, and started groaning.'

- (44) Вопрос мой *рассмешил/raz-smešil* Элоизу, и она истерически *рассмеялась...*<sup>58</sup>  
 'My question **made** Eloise **laugh**, and she broke into hysterical laughter...'

Aside from the peripheral UN- meaning, all parts of the radial category of *raz-* are also represented by simplex verbs that form Natural

<sup>55</sup> [Валерий Лебедев. Отечество в опасности (2003) // «Лебедь» (Бостон), 2003.11.01]

<sup>56</sup> [Сергей Козлов. Правда, мы будем всегда? (1969–81)]

<sup>57</sup> [Ю. О. Домбровский. Факультет ненужных вещей, часть 2 (1978)]

<sup>58</sup> [Виорель Ломов. Музей // «Октябрь», 2002]

Perfectives with this prefix. The overlap is consistent and systematic, involving the prototypical meaning and most of the meanings directly connected to the prototype. Indeed, all meanings that could conceivably be available for Natural Perfectives are attested; UN- is not available for this function due to its meaning.

### 2.5.2. *pri-* ARRIVE

The radial category of *pri-* is based on the analysis of eighty-seven Specialized Perfectives and thirteen Complex Act Perfectives. This radial category has the prototype ARRIVE, plus three more meanings directly connected to the prototype: ATTACH, ADD, and ATTENUATE. Twenty-five Natural Perfectives are distributed across all meanings except ATTENUATE. The ATTENUATE meaning is not compatible with the formation of Natural Perfectives, as argued below.

Thirty-seven Specialized Perfectives are found in the prototypical meaning, and eleven of these are formed from verbs of motion, such as *прибежать/pri-bežat'* 'arrive running' (*бежать/bežat'* 'run') and *прилететь/pri-letet'* 'arrive flying' (*лететь/letet'* 'fly'). The simplex verb *быть/byt'* 'be' yields the generic arrival verb *прибыть/pri-byt'* 'arrive', and other kinds of movement are represented as well: *причаться/pri-mčat'(sja)* 'rush to a place' (*мчаться/mčat'(sja)* 'rush'), *прислать/pri-slat'* 'send to a place' (*слать/slat'* 'send'), *притянуть/pri-tjanut'* 'pull to a place' (*тянуть/tjanut'* 'pull'), as well as requests that yield arrival, as in *пригласить/pri-glasit'* 'invite' (*гласить/glasit'* 'announce'). Metaphorical arrivals can include thoughts as in *придумать/pri-dumat'* 'think up' (*думать/dumat'* 'think') and causes as in *причинить/pri-činit'* 'cause' (*чинить/činit'* 'carry out'). A subgroup of Specialized Perfectives denotes the bringing of perception to something, as in *присмотреться/pri-smotret'sja* 'focus closely on an image' (*смотреться/smotret'* 'watch'), *прислушаться/pri-slušat'sja* 'listen with attention, heed' (*слушаться/slušat'* 'listen'), and *приметить/pri-metit'* 'notice' (*метить/metit'* 'mark'). Eleven Natural Perfectives are found in the ARRIVE meaning and two of them denote motions: *приблизиться/pri-blizit'sja* 'approach' and *привести/pri-vesti* 'bring (leading)'. Several Natural Perfectives in this meaning are metaphorical and focus on the arrival of dreams as in *присниться/pri-snit'sja* 'appear in a dream', as well as orderly states as in *приготовиться/pri-gotovit'(sja)* 'prepare,

cook'. One Natural Perfective belongs to the perception/attention subgroup: *прицелиться/pri-celit'sja* 'aim'.

ATTACH can be thought of as a type of arrival that results in something becoming fixed in a place. This meaning is found with thirty-eight Specialized Perfectives, such as *привинтить/pri-vintit'* 'screw onto' (*винтить/vintit'* 'screw') and *привязать(ся)/pri-vjazat'(sja)* 'tie onto' (*вязать(ся)/vjazat'(sja)* 'tie'), and there are generalized verbs for this meaning such as *приделать/pri-delat'* 'attach' (*делать/delat'* 'do') and *прикрепить/pri-krepit'* 'attach' (*крепить/krepit'* 'fasten'). Twelve Natural Perfectives are found in this meaning, and they typically have simplex verbs that involve attachment or clinging, as in *прилипнуть/pri-lipnut'* 'stick to', *пришвартовать(ся)/pri-švartovat'(sja)* 'moor to' and *прильнуть/pri-l'nut'* 'cling to'.

ADD involves an arrival that increases a larger whole. Twelve Specialized Perfectives are found in this meaning, such as *пристроить(ся)/pri-stroit'(sja)* 'build on' (*строить(ся)/stroit'* 'build'), *причислить/pri-čislit'* 'add' (*числить/čislit'* 'count'), and the generalized verb for this meaning *придатъ/pri-dat'* 'add' (*датъ/dat'* 'give'). The two Natural Perfectives in this meaning are *приplusplusовать/pri-pljusovat'* 'add to' and *приторговать/pri-torgovat'* 'buy something extra for somebody'.

Both ATTACH and ADD involve introducing something smaller, and the ATTENUATE meaning focuses only on this component. ATTENUATE is found in thirteen Complex Act Perfectives, all of which signal doing something to a reduced degree, such as *приглушить/pri-glušit'* 'muffle a bit' (*глушить/glušit'* 'muffle'), *притормозить/pri-tormozit'* 'brake slightly' (*тормозить/tormozit'* 'brake'), and *притупить(ся)/pri-tupit'(sja)* 'blunt slightly' (*тупить/tupit'* 'blunt'). No Natural Perfectives are formed in this meaning, which is reasonable since the ATTENUATE meaning is incompatible with the completion meaning of a Natural Perfective: one cannot in a single act both do something just a little bit and do it completely.

We find overlap in all meanings of the *pri-* radial category except one, and this gap makes sense because the one meaning that shows no overlap is incompatible with the formation of Natural Perfectives. As we saw with *raz-*, the overlap found with *pri-* includes the prototype and constitutes a coherent subset of the radial category. As we will see, this is true for all the remaining prefixes.

### 2.5.3. *ot-* DEPART

The radial category of *ot-* is based on the analysis of eighty-six Specialized Perfectives and twenty-one Complex Act Perfectives. This radial category has the prototype DEPART, plus five more meanings directly connected to the prototype: BOUNCE, UNSTICK, REMOVE, MAKE NON-FUNCTIONAL, and STOP AT THE ENDPOINT. Nearly half of the Specialized Perfectives, thirty-nine of them, are associated with the prototype. Eleven of these involve verbs of motion, such as *отбежать/ot-bežat'* 'run off' (*бежать/bežat'* 'run'), *отойти/ot-jti* 'walk off' (*идти/idti* 'walk'), and *отлететь/ot-letet'* 'fly off' (*летесть/letet'* 'fly'). The simplex verb *быть/byt'* 'be' yields the generic departure verb *отбыть/ot-byt'* 'depart', and other kinds of movement are represented as well: *отмести/ot-mesti* 'sweep aside, reject' (*мести/mesti* 'sweep'), *отклонить(ся)/ot-klonit'(sja)* 'decline, reject' (*клонить(ся)/klonit'(sja)* 'bend, incline'), and *оттянуть/ot-tjanut'* 'draw out, delay' (*тянуть/tjanut'* 'pull'). Two simplex verbs have an inherent meaning of departure and thus form their Natural Perfectives with *ot-* in this meaning: *отретироваться/ot-retirovat'sja* 'retreat, withdraw' and *отпарироваться/ot-parirovat'* 'parry (defensive move in fencing)'.

BOUNCE is the second meaning, involving verbs that describe either bouncing off something or the creation of an impression by contact. *Отлететь/ot-letet'* 'bounce back' (*летесть/letet'* 'fly') and *отбить/ot-bit'* 'beat back' (*бить/bit'* 'beat') both describe physical bouncing, and *отпечататься/ot-pečatat'sja* 'be imprinted' (*печатать(ся)/pečatat'(sja)* 'print') describes contact and removal that leaves an impression. This group also includes more abstract reflected movements, as in *отплатить/ot-platit'* 'pay back' (*платить/platit'* 'pay'), and *отработать/ot-rabotat'* 'work off (a debt)' (*работать/rabotat'* 'work'), along with the more general verb *отозваться/ot-zvat'sja* 'respond' (*звать/zvat'* 'call'). The Natural Perfectives associated with this meaning come in two groups, one focused on imprinting or shaping, as in *отчеканить/ot-čekanit'* 'stamp a design (as in a coin)' and *отлитъ/ot-lit'* 'cast (in metallurgy, as in a bell or cannon)', and another group of reaction verbs, such as *отреагировать/ot-reagirovat'* 'react', *отсалютовать/ot-saljutovat'* 'salute', and *ом(о)мстить/ot-mstit'* 'take revenge'.

UNSTICK assumes a previous action that is undone, freeing an object from a fixed position or state. We see this in terms of concrete Specialized Perfectives such as *откопать/ot-kopat'* 'dig up' (*копать/kopat'*

'dig'), *открыть(ся)/ot-kryt'(sja)* 'open, uncover' (*крыть/kryt'* 'cover'), *отвинтить(ся)/ot-vintit'(sja)* 'unscrew' (*винтить/vintit'* 'screw'), and *отпереть/ot-peret'* 'unlock' (*переть/peret'* 'push (a bolt in a lock)'). One can also unlock mysteries with *отгадать/ot-gadat'* 'solve by guessing' (*гадать/gadat'* 'guess, tell fortunes'). Low temperature can freeze things in a fixed state, which is undone by warming things up, as in *оттаять/ot-tajat'* 'thaw out' (*таять/tajat'* 'melt') and *отогреться/ot-gret'sja* 'warm up to normal' (*греться/gret'sja* 'warm oneself'). No Natural Perfectives are attested for this meaning.

**REMOVE** differs from **DEPART** and **UNSTICK** in that the item removed is a part of something. A representative example for this meaning is *отделить(ся)/ot-delit'(sja)* 'detach' (*делить/delit'* 'divide'). The Specialized Perfectives can be grouped according to whether the part is a piece of an object or a portion of a mass. Pieces can be removed in various ways: *оторвать(ся)/ot-rvat'(sja)* 'tear off' (*рвать(rvat'(sja)* 'tear'), *отколоть(ся)/ot-kolot'(sja)* 'break off' (*колоть/ kolot'* 'stab, chop'), and *отрубить/ot-rubit'* 'chop off' (*рубить/rubit'* 'chop'). Removal from masses is evident in verbs like *откачать/ot-kačat'* 'pump out' (*качать/kačat'* 'pump'), *отпить/ot-pit'* 'take a sip of' (*пить/pit'* 'drink'), and *отмерить/ot-merit'* 'measure out some of' (*мерить/merit'* 'measure'). One Natural Perfective belongs here: *отчиренковать/ot-čerenkovat'* 'remove a piece of a plant (in order to graft it to another)'.

**MAKE NON-FUNCTIONAL** involves action that goes so far that it renders something non-functional. Thus a departure from a normal quantity of action is interpreted as excessive. With the prefix *ot-*, such excessive actions involve beating and changes of state, both of which cause damage. The Specialized Perfectives in this meaning include two that refer to beating, *отбить/ot-bit'* 'beat up' (*бить/bit'* 'beat') and *отделать/ot-delat'* 'beat up' (*делать/delat'* 'do'), plus three that involve changes of state: *отлежать/ot-ležat'* 'make numb by lying' (*лежать/ležat'* 'lie'), *отсидеть/ot-sidet'* 'make numb by sitting' (*сидеть/sidet'* 'sit'), and *отморозить/ot-morozit'* 'injure by frost-bite' (*морозить/morozit'* 'freeze'). Twelve of the fourteen Natural Perfectives in this meaning refer to beating or attack, such as *отдубасить/ot-dubasit'* 'beat up with a cudgel', *отстегнать/ot-stegat'* 'whip', *отшлепать/ot-šlepát'* 'smack', and *отругать/ot-rugat'* 'curse someone out'. There are two Natural Perfectives that denote changes of state, and both can be glossed as 'be damaged by moisture': *отсыреть/ot-syret'* and *отволгнуть/ot-volgnut'*.

STOP AT THE ENDPOINT refers to a departure from an activity that someone or something has been preoccupied with for some time. Twenty-one Complex Act Perfectives represent this meaning, as in *отцвести/ot-cvesti* 'finish blossoming' (*цвести/cvesti* 'blossom'), *отслужить/ot-služit'* 'finish a tour of duty or church service' (*служить/služit'* 'serve'), and *отвоевать/ot-voevat'* 'finish fighting, conquer' (*воевать/voevat'* 'wage war'), *отлететь/ot-letat'* 'stop flying after a given period' (*летать/letat'* 'fly'), *отходить/ot-xodit'* 'stop walking, finish attending meetings/concerts, etc.' (*ходить/xodit'* 'walk'). The twenty-three Natural Perfectives in this meaning form two groups. The first group involves applying corrections or improvements to an object, and this activity ceases when all the changes are done. These include verbs like *отремонтировать/ot-remontirovat'* 'repair' and *отредактировать/ot-redaktirovat'* 'edit'. A more concrete group of verbs denotes a change that is applied to the surface of an object, as in *отштукатурить/ot-štukaturit'* 'plaster' and *отполировать/ot-polirovat'* 'polish'. These activities cease when the entire surface has been treated.

Overall, Natural Perfectives are formed from simplex verbs that overlap with five out of six of the meanings of *ot-*. Natural Perfectives are associated with the prototypical meaning DEPART and are particularly strongly represented among the BOUNCE and STOP AT THE ENDPOINT meanings. The UNSTICK meaning of *ot-*, like the UN- meaning of *raz-*, is incompatible with the formation of Natural Perfectives and is the only meaning for which there is no overlap.

#### 2.5.4. *v(o)z-* MOVE UPWARD

This prefix appears in two variants, *vz-* and *voz-*, which stem from a single etymological source (Indo-European \**ud-* 'up'; Vasmer 1976, 1: 214). The native Russian version is *vz-*; *voz-* results from a Church Slavonic pronunciation and is often associated with a higher register. Both *vz-* and *voz-* occur in all meanings of our radial category, and that justifies joining them for the purposes of our analysis.<sup>59</sup>

<sup>59</sup> In considering *vz-* and *voz-* to be a single prefix, we follow Townsend (1975: 123). By contrast, Isačenko (1960: 149), Švedova et al. (1980: 357–58), and Vinogradova (1984: 24–26) list *vz-* and *voz-* as two prefixes that differ in register. Endresen and Sokolova (2011) have revisited this problem and concluded that despite minor differences, the two variants share a single radial category.

The radial category of *v(o)z-* is established on the basis of fifty-three Specialized Perfectives. The prototype is MOVE UPWARD, which is directly related to the three remaining meanings: AGITATE (connected to UPWARD in that it raises the energy level and is apparent on the upper surface), RESIST (resistance is something that is raised UPWARD), and REBUILD (bringing something back to an UPWARD position). Natural Perfectives are found for all meanings except REBUILD, which is logical since this meaning entails doing something again: re-doing something cannot be the neutral outcome of doing something.

In the prototypical meaning MOVE UPWARD, we find verbs of motion and other movements among the simplexes that form Specialized Perfectives, as in *взбежать/vz-bežat'* 'run up' ('бежать/bežat' 'run'), *взлететь/vz-letet'* 'fly up' ('лететь/letet' 'fly'), *взобраться/vz-brat'sja* 'climb up' ('браться/brat'sja' 'touch, lay hands on'), and *возвыситься(vz-vysit')(sja)* 'raise, elevate, rise' ('выситься(sja)/vysit'(sja) 'tower'). Nurturance and status are also important in this meaning, as in *воспитать/voz-pitat'* 'raise, bring up' ('питать/pitat' 'feed'), *возвести/voz-vesti* 'elevate (e.g., to the throne), raise, erect' ('вести/vesti' 'lead'), *восторжествовать/voz-toržestvovat'* 'triumph over' ('торжествовать/toržestvovat' 'triumph'), and high register verbs like *востребовать/voz-trebovat'* 'call for, demand' ('требовать/trebovat' 'need'). The six Natural Perfectives found in the MOVE UPWARD meaning are entirely parallel, with simplex verbs that denote climbing upward, as in *взгромоздиться/vz-gro-mozdit'sja* 'tower, clamber up' and *вскарабкаться/vz-karabkat'sja* 'climb up', upbringing in *взлелять/vz-lelejat'* 'foster' and *возмужать/voz-mižat'* 'reach maturity', and status in *воспеть/voz-pet'* 'praise, eulogize' and high register verbs like *воспользоваться/voz-pol'zovat'sja* 'make use of'.

AGITATE is found in twenty-one Specialized Perfectives. Concrete Specialized Perfectives in this meaning are formed from simplex verbs that describe physical impact, as in *взбить/vz-bit'* 'shake, fluff, whip up' ('бить/bit' 'beat'), *взорвать(vz-rvat')* '(sja)' 'explode' ('рвать(sja)/rvat'(sja) 'tear'), *взломать/vz-lomat'* 'break open (e.g., a lock)' ('ломать/lomat' 'break'), *вспороть/vz-porot'* 'rip open' ('пороть/porot' 'rip'), and *вскрыть(vz-kryt')* '(sja)' 'open, unseal' ('крыть(sja)/kryt'(sja) 'cover'). Other uses belong to the domains of sounds and emotions: *вскричать/vz-kričat'* 'exclaim' ('кричать/kričat' 'shout'), *возбудить(vz-budit')* '(sja)' 'excite, arouse' ('будить/budit' 'awake'), *возлюбить/voz-ljubit'* 'come to love' ('любить/ljubit' 'love'). Natural Perfectives are plentiful

in this meaning; there are thirty-four of them. In concrete domains they are built from simplex verbs that specify the stirring up of various substances and objects, such as soil in *вспахать/vz-paxat'* 'plow', liquids in *взпенить(sя)/vz-penit'(sja)* 'make foamy, frothy', hair in *взъерошить(sя)/vz-erošit'(sja)* 'tousle', and skin in *вспухнуть/vz-puxnut'* 'swell up'. Emotional agitation is found in verbs like *взволновать(sя)/vz-volnovat'(sja)* 'disturb, worry', *вздорить/vz-bodrit'* 'cheer up', and *взбесить(sя)/vz-besit'(sja)* 'infuriate, drive mad'.

RESIST is found with three Specialized Perfectives: *взбунтоваться/vz-bunтоват'sja* 'revolt, rebel' (*бунтоваться/bunтоват'sja* 'revolt, rebel'), *воздержаться/voz-deržat'sja* 'abstain from' (*держать(sя)/deržat'(sja)* 'hold'), and *возразить/voz-razit'* 'raise an objection' (*разить/razit'* 'strike'). There are also four Natural Perfectives in this meaning: *всопротивиться/voz-protivit'sja* 'resist', *воспрепятствовать/voz-prepjatstvovat'* 'hinder', *взъерениться/vz-erepenit'sja* 'bristle, become annoyed', and *взбунтоваться/vz-bunтоват'* 'revolt'.

The REBUILD meaning refers to a presupposed situation in which something was destroyed or lacking, such that a new round of activity is undertaken to make up for what was missing. There are five Specialized Perfectives here: *возродить(sя)/voz-rodit'(sja)* 'revive' (*родить/rodit'* 'give birth'), *восстановить(sя)/voz-stanovit'(sja)* 'restore, renew' (*становить(sя)/stanovit'(sja)* 'set, become'), *вспомнить(sя)/vz-pomnit'(sja)* 'recall to mind' (*помнить(sя)/pomnit'(sja)* 'remember'), *возвратить(sя)/voz-vratit'(sja)* 'return, give back' (*воротить/vorotit'* 'turn'), and *восполнить/voz-polnit'* 'make up for' (*полнить/polnit'* 'fill'). This meaning is incompatible with simple perfectivization, and no Natural Perfectives are found here.

#### 2.5.5. *o(b)-* AROUND

Like *v(o)z-*, the prefix *o(b)-* has variants that derive from a single etymological source: *o-*, *ob-*, and *obo-*. While most grammars consider these to be variants of a single prefix, some have argued that *o-* is distinct from *ob-* (and *obo-*).<sup>60</sup> Baydimirova (2010) has tested this question by analyzing verbs with *o-*, *ob-*, and *obo-*, and by conducting an experi-

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<sup>60</sup> Major Russian grammars and scholarly works that treat *o(b)-* as a single prefix include Zaliznjak and Šmelev 1997: 73; Zaliznjak and Šmelev 2000: 83; Wade 1992: 277; Timberlake 2004: 404; Townsend 1975: 127; Vinogradov, Istrina, and Barxudarov 1952:

ment in which native speakers of Russian selected prefix variants for both existing and nonce (invented) verbs. Both studies show that the three variants overlap: they are available in all meanings of the same radial network. On the basis of these results we treat *o(b)-* as a single prefix.

The radial category of *o(b)-* is established on the basis of 185 Specialized Perfectives. The prototype is AROUND, and it has seven additional related meanings that can be roughly sorted into two groups: 1) PASS, OVERDO, and MISTAKE; 2) AFFECT MANY, AFFECT A SURFACE, ENVELOP, and IMPOSE/ACQUIRE A NEW FEATURE. The first group focuses on the fact that going around means passing or avoiding something, whereas the second focuses on the way in which movement around can affect an object (or objects) by distributing something or surrounding an object. An interesting feature of *o(b)-* is that it is common for a Specialized Perfective to represent more than one of the meanings: *o(б)бежать/o(b)-bežat'* (*бежать/bežat'* 'run') expresses 'run around' in the AROUND meaning, 'run past' in the PASS meaning, and 'running visit many places' in the AFFECT MANY meaning.<sup>61</sup> Natural Perfectives are found in six out of eight of the meanings; they are lacking only in PASS and AFFECT MANY.

The prototypical meaning AROUND describes circular motion, and it forms Specialized Perfectives from verbs of motion, such as *o(б)бежать/o(b)-bežat'* 'run around' (*бежать/bežat'* 'run') *облететь/ob-letet'* 'fly around' (*лететь/letet'* 'fly'), and *обойти/ob-jti* 'walk around' (*идти/idti* 'walk'). Natural Perfectives like *окольцевать/o-kol'cevat'* 'put a ring around' are parallel to the Specialized Perfectives like *окружить(sя)/o-kružit'(sja)* 'surround, encircle' (*кружить/kružit'* 'whirl') in this meaning. This meaning is also found in Natural Perfectives like *обменять(sя)/ob-menjat'(sja)* 'exchange' where the movement of two objects creates a circle of exchange.

PASS describes a path that is only part of a circle, and many of the same verbs of motion form Specialized Perfectives here as well, such as *o(б)бежать/o(b)-bežat'* 'run past' (*бежать/bežat'* 'run'), *облететь/ob-*

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589–92; Isačenko 1960: 148; Barykina, Dobrovolskaja, and Merzon 1989; Hougaard 1973, and Roberts 1981. Alekseeva 1978, Andrews 1984, and Krongauz 1998: 131–48 present the opposing view that there are two distinct prefixes.

<sup>61</sup> Representation of multiple meanings in Specialized Perfectives is possible with any prefix, but it is particularly pronounced in the case of *o(b)-* and *pere-*.

*letet'* 'fly past' (*лете́ть/letet'* 'fly'). Surpassing is a type of passing, and we find both verbs of motion and other types of simplexes here: *обойти/ob-jti* 'surpass in some activity' (*идти/idti* 'walk'), and *обыграть/ob-igrat'* 'win, beat at a game' (*играть/igrat'* 'play'). Natural Perfectives are not found in this meaning.

OVERDO is similar to PASS, but involves a standard (the normal way of doing something) that is exceeded rather than an object that is passed. Indulgence is at the heart of this meaning, and Specialized Perfectives are formed from verbs of consumption and behavior, such as *объесться/ob-est'sja* 'overeat' (*есть/est'* 'eat').<sup>62</sup> A Natural Perfective in this meaning is *о(б)корнать/o(b)-kornat'* 'cut too short and uneven'.

The MISTAKE meaning is connected to the previous three meanings in that something is circumvented, but this time it is the correct behavior. MISTAKE has two interpretations, depending upon whether the mistake is intentional or not. Some Specialized Perfectives indicate an accidental mistake (usually with the reflexive *-ся/сь*), as in *обсчитаться/ob-sčitat'sja* 'make a mistake in calculation' (*считать/sčitat'* 'calculate') and *ослышишься/o-slyšat'sja* 'mishear' (*слышать/slyšat'* 'hear'). Others describe mistakes made in order to deceive someone, as in *обвесить/ob-vesit'* 'cheat in weighing goods' (*весить/vešat'* 'weigh') and *обсчитать/ob-sčitat'* 'shortchange' (*считать/sčitat'* 'calculate'). Natural Perfectives represent both the accidental use in *оплошать/o-plošat'* 'blunder' and the intentional use in *одурачить/o-duračit'* 'make a fool of'.

In the AFFECT MANY meaning we again find Specialized Perfectives formed from verbs of motion, this time indicating that many places are visited, as in *о(б)бежать/o(b)-bežat'* 'running visit many places' (*бежать/bežat'* 'run') and *облететь/ob-letet'* 'flying visit many places' (*лете́ть/letet'* 'fly'). Verbs describing other actions that can "reach" people or goals can also form Specialized Perfectives in this meaning: *обзвонить/ob-zvonit'* 'call a number of people' (*звонить/zvonit'* 'call') and *опросить/o-prosit'* 'survey, interview a number of people' (*просить/prosit'* 'ask'). No Natural Perfectives are found in this meaning.

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<sup>62</sup> Many Specialized Perfectives are found in this meaning, such as *о(б)питься/o(b)-pit'sja* 'drink to excess' (*пить/pit'* 'drink'), *обленититься/ob-lenit'sja* 'become too lazy' (*ленититься/lenit'sja* 'be lazy'), but they are of too low frequency in the Russian National Corpus to be included in this study.

The remaining three meanings of the network are closely interrelated and contain the highest numbers of Natural Perfectives: AFFECT A SURFACE (thirty-seven Natural Perfectives), ENVELOP (twenty-three Natural Perfectives), and IMPOSE/ACQUIRE A NEW FEATURE (161 Natural Perfectives). A typical Specialized Perfective in the AFFECT A SURFACE meaning is *оклеить/o-kleit'* 'cover by gluing' (*клейить/kleit'* 'glue'); Natural Perfectives have a parallel meaning, as in *остеклить/o-steklit'* 'cover with glass'. In the ENVELOP meaning we have Specialized Perfectives that describe an action that goes on all sides of an object, not just the surface, as in *обкусить/ob-kusat'* 'bite all over' (*кусить/kusat'* 'bite'). The notion of affecting something from all sides is already in the simplex verb for the Natural Perfectives like *o(b)щипат/o(b)-šcipat'* 'pluck'. The IMPOSE/ACQUIRE A NEW FEATURE meaning is similar to the previous two meanings; Specialized Perfectives include *ободрить/o-bodrit'* 'cheer up' and *охладить/o-xladet'* 'grow cold, lose interest'; Natural Perfectives include *отрезвить/o-trezvit'* 'make sober' and *обрюзгнуть/o-brjuzgnut'* 'become flabby, flaccid'. There are some verbs that are multiply motivated by these three meanings, such as the Natural Perfective *o(b)смолить/o(b)-smolit'* 'cover or saturate with resin', which can refer to an action just on the surface or on all sides of an object, or to penetration and therefore acquisition of a new feature.

Overlap is present in the prototypical meaning and also in five out of seven of the other meanings. The two meanings where we do not find overlap seem to be excluded by the logic of the Natural Perfective. On the one hand, we have the PASS meaning, which involves a comparison between one performance and another that overtakes or outdoes the first performance. On the other hand, we have the AFFECT MANY meaning, which involves multiple performances. Both of these meanings entail a complication in terms of comparison or quantification that is usually not compatible with simple perfectivization. Thus we can say that for *o(b)-* overlap is found in all the meanings where it might logically appear.

#### 2.5.6. *vy-* and *iz-* OUT OF A CONTAINER

Although there is some controversy, it is often claimed that *iz-* is a Church Slavonic variant of the native Russian *vy-*.<sup>63</sup> At any rate, the two prefixes have co-evolved, and in a detailed study Nesson, Endresen, and Janda (2011) have shown that they share a single radial

category, despite the fact that they have slightly different strengths within that category.

Due to their special relationship, we treat *vy-* and *iz-* together. Though this analysis focuses on the shared meanings, we also point out differences. Both prefixes can express concrete meanings, but *vy-* tends to be more concrete as opposed to *iz-*, which is often more abstract, as in *втылить/vy-lit'* *воду* 'pour out water' vs. *излить/iz-lit'* *гнев* 'pour out/express anger' (*литъ/lit'* 'pour'). And although both *vy-* and *iz-* can express exhaustive completion of an action, as we see in *выкурить/vy-kurit'* *сигарету* 'smoke up a cigarette' (*курить/kurit'* 'smoke') and *изучить/iz-učit'* *вопрос* 'make a thorough study of an issue' (*учитъ/učit'* 'study'), *iz-* is relatively more invested in such meanings than *vy-*.

The radial category of *vy-* and *iz-* is established on the basis of ninety-six Specialized Perfectives prefixed in *vy-* and thirty-eight Specialized Perfectives prefixed in *iz-*. The prototype for the radial category is OUT OF A CONTAINER, which has a close neighbor in the meaning EMPTY A CONTAINER. A cluster of three meanings is closely related to these two and focuses on exhaustive action: EXHAUSTIVE RESULT, NEGATIVE EXHAUSTION, and EXHAUST A SURFACE. Two meanings involve bringing something out of an object in terms of creation: CREATE AN IMAGE ON A SURFACE and MAKE OUT OF. The remaining three meanings are variously motivated from the prototype: DECLINE/DEVIATE involves moving something out of its normal position, ACQUIRE involves getting something out of someone else, and ENDURE involves moving out of a state of waiting or suffering.

The prototypical meaning OUT OF A CONTAINER is robustly attested for both *vy-* and *iz-*, and for both types of perfectives. Specialized Perfectives prefixed in *vy-* are found in all ten meanings in the radial category, and Natural Perfectives prefixed in *vy-* are found in all but two of these: DECLINE/DEVIATE and ENDURE. Specialized Perfectives

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<sup>63</sup> The proposal that *vy-* and *iz-* are variants is made by Berneker (1924: 440), Vasmer (1976, 1: 473), Townsend (1975: 125), Dem'janov (2001: 336). However, *iz-* is not entirely a borrowed element in Russian and there are phenomena that suggest a more complicated relationship. For example, longitudinal studies show that spatial meanings of *iz-* have over time been transferred to *vy-* (Dadabaeva 1978), and some meanings of *iz-* (specifically exhaustiveness) cannot be attributed to Old Church Slavonic influence (Belozercev 1966).

prefixed in *iz-* are found in eight of the ten meanings of the radial category: all but CREATE AN IMAGE ON A SURFACE and ENDURE. Natural Perfectives prefixed in *iz-* are found in five of the eight meanings represented by *iz-*. These include, in addition to the prototype, the cluster of exhaustive meanings, plus DECLINE/DEVIATE.

In the prototypical meaning OUT OF A CONTAINER there are fifty-two Specialized Perfectives formed with *vy-*, plus twelve formed with *iz-*. We find Specialized Perfectives formed from verbs of motion as in *выбежать/vy-bežat'* 'run out' and *избежать/iz-bežat'* 'avoid' (*бежать/bežat'* 'run'), *вылететь/vy-letet'* 'fly out' (*лететь/letet'* 'fly'), *изгнать/iz-gnat'* 'banish' (*гнать/gnat'* 'chase'). Other types of movement are also found, as in *выволочь/vy-voloč'* 'drag out' and *извлечь/iz-vleč'* 'extract, take out of' (*воловчь/voloč'* and *влечь/vleč'* are Russian and Church Slavonic variants of the same simplex meaning 'drag'). Other domains can be involved, as in *выдумать/vy-dumat'* 'think up' (*думать/dumat'* 'think'), where an idea emerges from a mind; and *извинить(sja)/iz-vinit'(sja)* 'excuse' (*винить/vinit'* 'accuse'), where one gets out of a situation. Twenty-nine Natural Prefixes with *vy-* and two with *iz-* are found in this meaning, and most involve domains other than concrete motion, as we see in *выпоимь/vy-poit'* 'bring up an animal', *вырастить/vy-rastit'* 'cultivate', *вылечить(sja)/vy-lečit'(sja)* 'cure', *излечить(sja)/iz-lečit'(sja)* 'cure', *изменить(sja)/iz-menit'(sja)* 'change'.

The EMPTY A CONTAINER meaning adds the nuance that the container is emptied as a result of the action. Here we find eight Specialized Perfectives with *vy-* and four with *iz-*. Some Specialized Perfectives in this meaning represent concrete domains, such as *вытечь/vy-teč'* 'flow out' (*течь/teč'* 'flow') and *выцарапать/vy-carapat'* 'scratch out' (*царапать/carapat'* 'scratch'), some can refer to both concrete and metaphorical actions, like *исчерпать/iz-čerpat'* 'run out of' (*черпать/čerpat'* 'scoop'), and others are primarily metaphorical, like *вымучить/vy-mučit'* 'extort' (*мучить/mučit'* 'torture'), *выговориться/vy-govorit'sja* 'say all that is on one's mind' (*говорить/govorit'* 'say'), and *изложить/iz-ložit'* 'express' (*класс/klast'* 'lay'). *Vy-* forms eleven Natural Perfectives in this meaning and these include verbs signaling emptying that is both physical, as in *выпить/vy-pit'* 'drink up', *высморкаться/vy-smorkat'(sja)* 'blow (one's) nose', and *выдолбить/vy-dolbit'* 'hollow out', and metaphorical, as in *выругаться/vy-rugat'sja* 'swear'.

In the EXHAUSTIVE RESULT meaning we find three Specialized Perfectives with *vy-* and six with *iz-*. This meaning draws a parallel be-

tween emptying a container and carrying out an action exhaustively. Examples of Specialized Perfectives include: *выспаться/vy-spat'sja* 'get a good night's sleep' (*спать/spat'* 'sleep'), *изорвать/iz-rvat'* 'tear all up into pieces' (*рвать/rvat'* 'tear'), *истлеть/iz-tlet'* 'rot, reduce to dust' (*тлеть/tlet'* 'rot'), and *исписать/iz-pisat'* 'write all over, using up all paper or ink' (*писать/pisat'* 'write'). Eighteen Natural Perfectives with *vy-* and fifteen with *iz-* are quite parallel: *высохнуть/vy-soxnut'* 'dry up', *искрошить(ся)/iz-krošit'(sja)* 'crumble up', and *израсходовать(ся)/iz-rasxodovat'(sja)* 'spend all of'.

The EXHAUST A SURFACE meaning is represented by four and three Specialized Perfectives, respectively. These include: *вытоптать/vy-toptat'* 'trample down' and *истоптать/iz-toptat'* 'trample all over' (*топтать/toptat'* 'trample'), *вытереть/vy-teret'* 'wipe up, rub dry' (*тереть/teret'* 'rub'), *изрыть/iz-ryt'* 'dig up all over' (*рыть/ryt'* 'dig'), and *исцарапать/iz-carapat'* 'scratch all over'. Natural Perfectives are built from simplex verbs that more narrowly describe changing the surface of an object, as in *выгладить/vy-gladit'* 'iron', *высеребрить/vy-serebit'* 'cover with silver', *вымазать(ся)/vy-mazat'(sja)* 'smear all over', *измазать(ся)/iz-mazat'(sja)* 'smear all over', *выпачкать(ся)/vy-pačkat'(sja)* 'soil, stain', *испачкать(ся)/iz-pačkat'(sja)* 'soil, stain'. There are twenty-three Natural Perfectives with *vy-* in this meaning, and seven with *iz-*; as the examples above show, it is entirely possible for the same simplex to have two Natural Perfectives, one with each prefix.

The NEGATIVE EXHAUSTION meaning has the added nuance that the result is negatively evaluated. Nine Specialized Perfectives are prefixed with *vy-* in this meaning, and seven are prefixed with *iz-*. The simplexes of these verbs describe actions that can be damaging if taken to an extreme: *выесть/vy-est'* 'corrode' (*есть/est'* 'eat'), *вымереть/vy-meret'* 'die out, become deserted' (*мереть/meret'* 'die'), *износить(ся)/iz-nosit'(sja)* 'wear out' (*носить(ся)/nosit'(sja)* 'wear'), *избить/iz-bit'* 'beat up' (*бить/bit'* 'beat'). Seven Natural Perfectives prefixed in *vy-* and sixteen with *iz-* have simplexes more narrowly focused on beating, torture, damage, and distress: *выпороть/vy-porot'* 'whip', *искалечить(ся)/iz-kalečit'(sja)* 'cripple', *измучить(ся)/iz-mučit'(sja)* 'torment', *испугать(ся)/iz-pugat'(sja)* 'scare', *выругать/vy-rugat'* 'scold'.

Only *vy-* is found in the CREATE AN IMAGE ON A SURFACE meaning, in which an image emerges (coming out, as it were). There are two Specialized Perfectives in this meaning: *вышишь/vy-šit'* 'embroider' (*шишь/šit'* 'sew') and *выжечь/vy-žeč'* 'brand, make a mark by burning'

(жечь/žeč' 'burn'). Five Natural Perfectives are found, among them: *выгравировать/vy-gravirovat'* 'engrave', *вытатуировать/vy-tatuirovat'* 'tattoo', *выштамповать/vy-štampovat'* 'print or stamp an image'.

The MAKE OUT OF meaning differs from the previous one in that an entire object emerges from a substance. There are three Specialized Perfectives in this meaning, one with *vy-*, and two with *iz-*: *выработать/vy-rabotat'* 'manufacture' (*работать/rabotat'* 'work'), *изгото- вить/iz-gotovit'* 'make out of' (*готовить/gotovit'* 'prepare'), and *изва- ять/iz-vajat'* 'sculpt out of' (*ваять/vajat'* 'sculpt'). *Vy-* forms thirteen Natural Perfectives in this meaning, primarily from verbs associated with metallurgy, sculpting, sewing, and woodworking: *выковать/vy- kovat'* 'forge', *вылепить/vy-lepit'* 'mold', *выстроить/vy-stročit'* 'sew on a sewing machine', *выточить/vy-točit'* 'make on a lathe'.

The DECLINE/DEVIATE meaning involves bending something out of a position rather than moving something out of a container. There are three Specialized Perfectives in this meaning, one with *vy-*, and two with *iz-*. Two of these verbs are formed from the same simplex and describe bending an object: *выгнуть/vy-gnut'* 'stretch out, curve (one's back)' and *изогнуть(ся)/iz-gnut'(sja)* 'bend out, crook' (*гнуть/gnut'* 'bend'). One Specialized Perfective describes instead a deviation in behavior: *изловчиться/iz-lovčit'sja* 'do something cunning' (*ловчить/lovčit'* 'act cunningly'). Only *iz-* forms Natural Perfectives in this meaning, and all refer to bending or distortion: *исковеркать/iz-koverkat'* 'distort, mangle', *искривить(ся)/iz-krivit'(sja)* 'bend, distort', *искоре- жить(ся)/iz-korežit'(sja)* 'bend, warp'.

Specialized Perfectives in the ACQUIRE meaning include eight formed with *vy-* and two with *iz-*, all of which express getting something out of someone: *выиграть/vy-igrat'* 'win' (*играть/igrat'* 'play'), *выпросить/vy-prosit'* and *испросить/iz-prosit'* 'obtain by asking' (*просить/prosit'* 'ask'), *истребовать/iz-trebovat'* 'claim, demand according to legal right' (*требовать/trebovat'* 'demand'), *выхлопотать/vy-xlopotat'* 'obtain after much trouble' (*хлопотать/xlopotat'* 'make efforts'). Only *vy-* forms Natural Perfectives in this meaning, and there are only two of them, *выклянчить/vy-kljančit'* and *выцыганить/vy-cyganit'*, both of which mean 'obtain by begging'.

ENDURE involves emerging from a state of waiting or suffering. Only *vy-* is found here; this prefix forms eight Specialized Perfectives in this meaning, but no Natural Perfectives. Examples of Specialized Perfectives include: *выждать/vy-ždat'* 'wait until the right time'

(*ждатъ/ždat'* ‘wait’), *выдержатъ/vy-deržat'* ‘endure’ (*держатъ/deržat'* ‘hold’), *выстрадатъ/vy-stradat'* ‘suffer through’ (*страдатъ/stradat'* ‘suffer’).

Overlap in the radial category of *vy-* and *iz-* is consistent with the pattern we have seen thus far. Natural Perfectives are found in the prototypical meaning, plus eight out of nine of the remaining meanings. The one meaning that is excluded here, ENDURE, expresses putting an end to a long period of waiting or suffering. ENDURE seems to be incompatible with simple perfectivization because it is a quantified, complex meaning.

#### **2.5.7. *raz-, pri-, ot-, v(o)z-, o(b)-, vy-, iz- and Corollary 1 of the Overlap Hypothesis***

While overlap between the meanings of prefixes and simplex verbs does not cover all the meanings in the networks, it is extensive since for each prefix all but one or two meanings are involved. The meanings that do not show overlap are those that are incompatible with the logic of Natural Perfectives in that they involve undoing something, quantification, or some kind of comparison. These prefixes all give support to Corollary 1 of the Overlap Hypothesis.

### **2.6. Prefixes with Minority Semantic Overlap: *pere-, pod-***

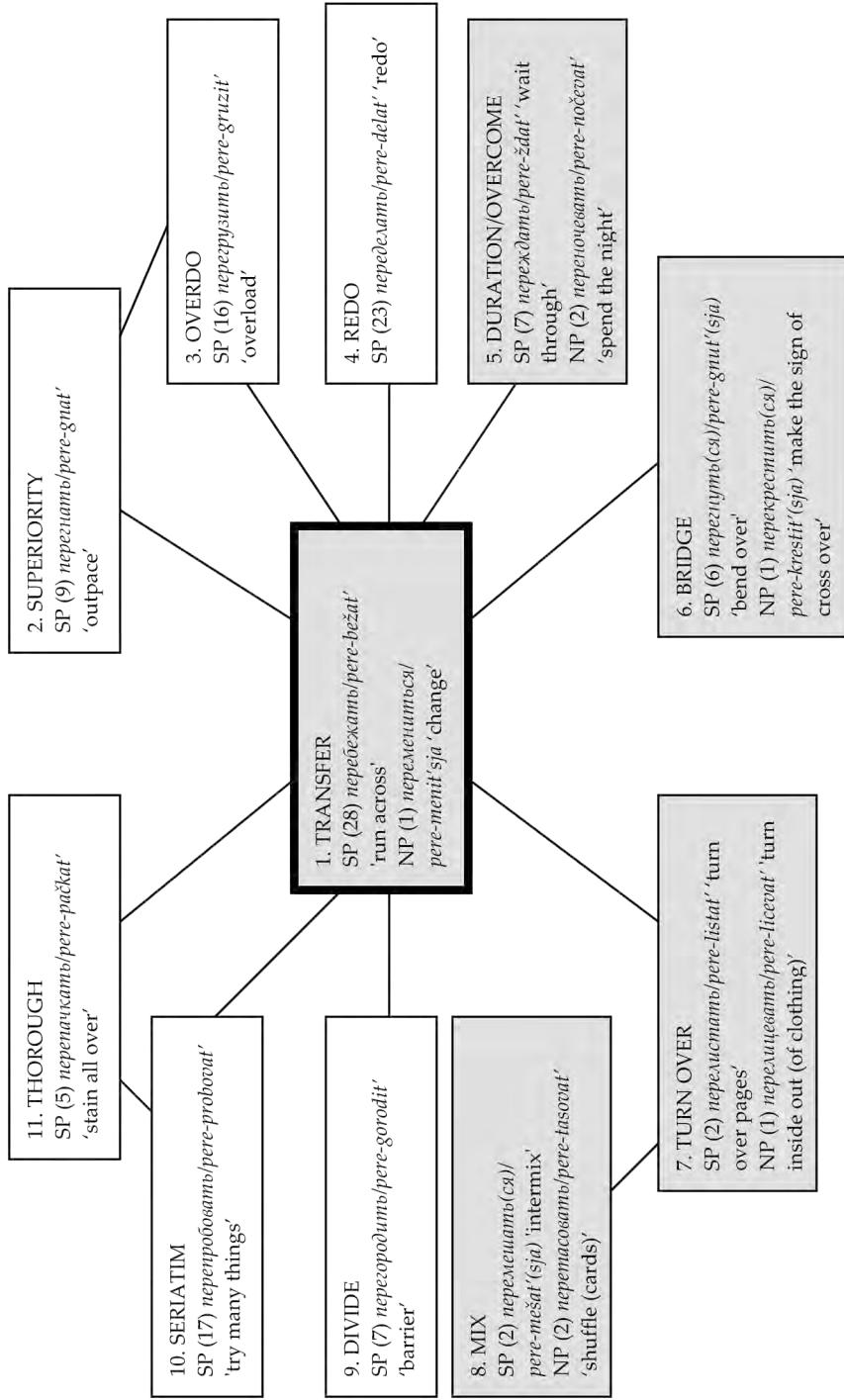
For these two prefixes, overlap with the simplex verbs involves fewer than half of the meanings of the prefixes. Still, however, the overlap is not random, since it always includes the prototypical meaning and other meanings closely related to it.

#### **2.6.1. *pere-* TRANSFER<sup>64</sup>**

The radial category in Figure 5 on page 67 is based on analysis of 122 Specialized Perfectives. The prototypical meaning of *pere-* is TRANSFER, expressing movement from one point to another, often with an inter-

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<sup>64</sup> There is a Church Slavonic variant of this prefix, namely *pre-*, but since it does not form any Natural Perfectives, we do not consider it here.

Figure 5. Radial Category for the Prefix *pere-*

vening barrier, such that the movement is usually conceived of as an arc. Meanings 2–4 involve comparison with another performance that is exceeded, yielding SUPERIORITY, OVERDO, and REDO. In the DURATION/OVERCOME meaning (5), the barrier is a time period. Meanings 6–8 represent variations on the arched movement of transfer, realized as BRIDGE, TURN OVER (for a single object), and MIX (for substances or collections). If the action involves cutting, going from one point to another creates a DIVIDE (9). Meanings 10–11 involve distribution of an action across either a number of items, SERIATIM, or across a single object or mass, THOROUGH. Many Specialized Perfectives prefixed in *pere-* have multiple interpretations representing more than one meaning. For example, *neprevaritъ/pere-varit'* (*варитъ/varit'* 'cook') can mean 'overcook' in the OVERDO meaning, 'cook again' in the REDO meaning, and 'digest' in the DURATION/OVERCOME meaning.

While there are many Specialized Perfectives prefixed in *pere-*, only a handful of Natural Perfectives use this prefix. Still, we find systematic overlap here, as indicated by the shading in boxes 1 and 5–8. The Natural Perfectives are found in the prototypical meaning, plus the cluster of meanings involving time (DURATION/OVERCOME) and the arched path of BRIDGE, TURN OVER, and MIX. Natural Perfectives are missing in the meanings that involve comparisons and certain kinds of quantification, consistent with the pattern we have seen among the prefixes in the previous section.

As with our presentation of *u-* and *raz-*, we first survey all the meanings of the radial category according to the Specialized Perfectives prefixed in *pere-*, which we take up in turn below.

### **1. TRANSFER**

Twenty-eight Specialized Perfectives are found in this meaning, and motion verbs are strongly represented, as in *nereberezatъ/pere-bežat'* 'run across' (*безжатъ/bežat'* 'run') and *nereletemetъ/pere-letet'* 'fly over' (*лететъ/letet'* 'fly'). We also find other movements, as in *nerekochevatъ/pere-kočevat'* 'migrate over' (*кочеватъ/kočevat'* 'migrate') and *neperealimtъ(sja)/pere-selit'(sja)* 'move, resettle' (*селимтъ(sja)/selit'(sja)* 'settle').

- (45) *Лавируя между машинами, я перебежал/pere-bežal* через дорогу и забаранил в дверь.<sup>65</sup>  
 ‘Maneuvering among the cars, I **ran across** the street and started banging on the door.’
- (46) *Его предки переселились/pere-selilis'* в Парагвай из Баварии.<sup>66</sup>  
 ‘His ancestors **moved** from Bavaria **and resettled** in Paraguay.’

Transfer can refer to “movement” to a new format, as in *переработать/pere-rabotat'* ‘convert into’ (*работать/rabotat'* ‘work’) and *перевести(s')*/*pere-vesti(s')* ‘translate’ (*вести/vesti* ‘lead’).

- (47) *По простоте душевной я перевел/pere-vel* «блэк тай» с английского как «черный галстук».<sup>67</sup>  
 ‘In an artless fashion I **translated** “black tie” in English as “black tie” in Russian.’

## 2. SUPERIORITY

In this meaning the boundary that is crossed is what someone else has done. There are nine Specialized Perfectives in the SUPERIORITY meaning, such as: *перегнать/pere-gnat'* ‘outpace, leave behind’ (*гнать/gnat'* ‘rush’), *перекричать/pere-kričat'* ‘outshout’ (*кричать/kričat'* ‘shout’), and *перехитрить/pere-xitrit'* ‘outwit’ (*хитрить/xitrit'* ‘use cunning’).

- (48) *Он перегнал/pere-gnal* меня и пошел передо мной, страстно жестикулируя и произнося как бы монолог.<sup>68</sup>  
 ‘He **outpaced** me and walked in front of me, gesticulating passionately and delivering what seemed to be a monolog.’

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<sup>65</sup> [Борис Хазанов. Город и сны (2001)]

<sup>66</sup> [Наталья Гладышева. Уголок России в Парагвае (2003) // «Спецназ России», 2003.01.15]

<sup>67</sup> [Артем Тарасов. Миллионер (2004)]

<sup>68</sup> [Андрей Битов. Русский устный и русский письменный // «Звезда», 2003]

- (49) *Фашисты пытались арестовать Павла Кирбая, да он их перехитрил/pere-xitril.<sup>69</sup>*  
 ‘The fascists tried to arrest Pavel Kirbaj, but he **outsmarted** them’

### 3. OVERDO

The boundary that is crossed in this meaning is a standard performance, such that the result is something that is done too much. Sixteen Specialized Perfectives are found, among them: *переполнить/pere-polnit* ‘overfill’ (*полнить/polnit* ‘fill’), *переработать/pere-rabotat* ‘work too long’ (*работать/rabotat* ‘work’), and *пересолить/pere-solit* ‘oversalt’ (*солить/solit* ‘salt’).

- (50) *Ты ведь, придя в гости, не скажешь хозяйке, что она пересолила/pere-solila суп.<sup>70</sup>*  
 ‘After all when you are a guest, you don’t tell the hostess that she **oversalted** the soup.’

### 4. REDO

This meaning refers to a previous performance. Twenty-three Specialized Perfectives are found in this meaning, including: *перезвонить/pere-zvonit* ‘call again’ (*звонить/zvonit* ‘call’), *переписать/pere-pisat* ‘rewrite’ (*писать/pisat* ‘write’), and *передумать/pere-dumat* ‘rethink, change one’s mind’ (*думать/dumat* ‘think’). We also find the generalized verb *переделать/pere-delat* ‘redo’ (*делать/delat* ‘redo’).

- (51) *Игорь ничего не имел против гориллы, поэтому переделал/pere-delal супермена в гориллу, и рисунок стал совсем ни на что не похож.<sup>71</sup>*  
 ‘Igor’ had nothing against gorillas, so he **redid** superman as a gorilla and the drawing became quite peculiar.’

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<sup>69</sup> [Спецзадание капитана Черного (2004) // «Солдат удачи», 2004.02.11]

<sup>70</sup> [Александр Бовин. Пять лет среди евреев и мидовцев, или Израиль из окна российского посольства (1999)]

<sup>71</sup> [Татьяна Устинова. Большое зло и мелкие пакости (2003)]

### **5. DURATION/OVERCOME**

This meaning realizes TRANSFER in the domain of time. The seven Specialized Perfectives in this meaning include: *переждать/pere-ždat'* 'wait through' (ждать/ždat' 'wait'), *пережить/pere-žit'* 'live through' (житъ/žit' 'live'), *переболеть/pere-bolet'* 'recover' (болеть/bolet' 'be sick'), and *переспать/pere-spat'* 'spend the night' (спать/spat' 'sleep').

- (52) *Ты уже, наверное, переспала/pere-spala* с этим москвичом?<sup>72</sup>  
 'I suppose you've already **spent the night** with that Muscovite?'

### **6. BRIDGE**

We find six Specialized Perfectives in this meaning referring to the spanning of spaces both concretely and by means of communication: *перегнуться/pere-gnut'(sja)* 'bend over' (гнуться/gnut'(sja) 'bend'), *перевязать/pere-vjazat'* 'put a bandage over' (вязать/vjazat' 'tie'), and *переговорить/pere-govorit'* 'discuss, talk over (the phone)' (говорить/govorit' 'talk').

- (53) *На дне окопа жена перевязала/pere-vjazala* мои раны.<sup>73</sup>  
 'Down in the trench my wife **bandaged** my wounds.'

### **7. TURN OVER**

Two Specialized Perfectives are found in this meaning: *перелистать/pere-listat'* 'turn over pages' (листать/listat' 'turn pages') and *перекосить/pere-kosit'* 'warp, distort' (косить/kosit' 'twist').

- (54) *Неожиданно лицо ее перекосила/pere-kosila* гримаса боли.<sup>74</sup>  
 'Suddenly a grimace of pain **distorted** her face.'

### **8. MIX**

In this meaning one portion of a group or mass is moved from one place to another, and thus the whole is mixed. The two Specialized

<sup>72</sup> [Геннадий Прашкевич, Александр Богдан. Человек «Ч» (2001)]

<sup>73</sup> [Андрей Кучаев. В германском плену // «Октябрь», 2001]

<sup>74</sup> [Андрей Житков. Супермаркет (2000)]

Perfectives in this meaning are *перемешать(ся)/pere-mešat'(sja)* ‘intermingle, shuffle’ (*мешать(ся)/mešat'(sja)* ‘mix’) and *переплести(съ)/pere-plesti(s')* ‘interweave’ (*плести(съ)/plesti(s')* ‘weave’).

- (55) Винозадов отправился в ресторан, заказал себе водки и сметаны.  
*Перемешал/pere-mešal* все это и выпил.<sup>75</sup>

‘Vinozadov headed for a restaurant and ordered himself vodka and sour cream. He **mixed** it all **together** and drank it up.’

#### **9. DIVIDE**

In this meaning the action is cutting or partitioning rather than movement. Seven Specialized Perfectives in this meaning include: *перерезать/pere-rezat'* ‘cut across’ (*резать/rezat'* ‘cut’), *переломить(ся)/pere-lomit'(sja)* ‘break in two, fracture’ (*ломить(ся)/lomit'(sja)* ‘break’), and *перегородить/pere-gorodit'* ‘partition off’ (*городить/gorodit'* ‘partition’).

- (56) Я *перерезал/pere-rezal* ремни безопасности, которые удерживали тело в кресле.<sup>76</sup>  
 ‘I **slit** the safety belts that were holding the body in the seat.’

#### **10. SERIATIM**

The SERIATIM meaning involves a series of objects, each of which is subjected to the action of the verb one after the other. We find seventeen Specialized Perfectives built from a wide variety of simplex verbs, as in *перебить/pere-bit'* (*все тарелки*) ‘break (all the dishes)’ (*бить/bit'* ‘break’), *переиграть/pere-igrat'* (*во все игры*) ‘play (all the games)’ (*играть/igrat'* ‘play’), *перечитать/pere-čitat'* (*все книги*) ‘read (all the books)’ (*читать/čitat'* ‘read’), *перерезать/pere-rezat'* ‘slaughter all of’ (*резать/rezat'* ‘slaughter’), and *перестрелять/pere-streljat'* ‘shoot all of, use up all ammunition’ (*стрелять/streljat'* ‘shoot’).

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<sup>75</sup> [Юрий Петкович. Явление ангела (2001)]

<sup>76</sup> [Таисия Белоусова. В оправдании не нуждается (2003) // «Совершенно секретно», 2003.07.04]

- (57) *Враги перерезали/pere-rezali* всех девушек своими кривыми саблями...<sup>77</sup>  
 ‘The enemies **slaughtered** all the girls with their curved sabres...’

### 11. THOROUGH

This meaning is similar to SERIATIM but refers to a single mass rather than a series of objects. Here we find five Specialized Perfectives such as *перепачкать/pere-pačkat'* ‘make dirty all over’ and *непонугать(sja)/pere-pugat'(sja)* ‘frighten thoroughly’.

- (58) *Перепачкал/pere-pačkal* руки о кастриюлю, вытер их об лоб и ходил зеброй весь вечер.<sup>78</sup>  
 ‘He **got** his hands **dirty** on the cooking pot, wiped them off on his forehead, and went around all evening looking like a zebra.’

There are only seven simplex verbs that form their Natural Perfectives with *pere-*, but these verbs cover the prototype plus the neighboring cluster that focuses on physical movements and duration. As the examples below show, the Natural Perfectives prefixed in *pere-* are strongly parallel to the meanings of *pere-* in this subset of the radial category.

There is one Natural Perfective in the prototypical TRANSFER meaning: *перемениться/pere-menit'sja* ‘change, become different’:

- (59) *Она совсем состарилась и очень переменилась/pere-menilas'.*<sup>79</sup>  
 ‘She has gotten quite old and **changed** entirely.’

Two Natural Perfectives are associated with the DURATION/OVERCOME meaning, and both refer to a specific time period: *переночевать/pere-nočevat'* ‘spend the night’ and *перезимовать/pere-zimovat'* ‘spend the winter’:

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<sup>77</sup> [Л. А. Чарская. Княжна Джаваха (1903)]

<sup>78</sup> [Эмма Герштейн. Мандельштам в Воронеже (по письмам С.Б.Рудакова) (1985-2002)]

<sup>79</sup> [Андрей Геласимов. Фокс Малдер похож на свинью (2001)]

- (60) Я знаю этого мальчика, он потерялся, *переночевал/pere-nočeval* у меня и сбежал...<sup>80</sup>  
 'I know that boy, he was lost, he **spent the night** at my place and ran off...'

One Natural Perfective is associated with the BRIDGE meaning: *непрекрестить(ся)/pere-krestit'(sja)* 'make the sign of the cross over':

- (61) Перед регистрацией в ЗАГСе летом 1943 года отец невесты благословил новобрачных иконой и *перекрестил/pere-krestil*.<sup>81</sup>  
 'Before going to the marriage registry in the summer of 1943, the bride's father blessed the newlyweds with an icon and **made the sign of the cross over** them.'

There is one Natural Perfective in the TURN OVER meaning: *перелицевать/pere-licevat'* 'turn inside out (of clothing)':

- (62) Когда я окончил университет, моя мать, считавшая, что лучшие старых вещей не бывает («разве сейчас такое где-нибудь купишь?»), *перелицевала/pere-licevala* для меня отцовский бостоновый костюм.<sup>82</sup>  
 'When I graduated from university, my mother, who thought that old things are always best ("certainly you can't buy anything like that nowadays"), **turned** my father's Boston suit **inside out** for me.'

Finally there are two Natural Perfectives with the MIX meaning: *непропутывать(ся)/pere-putat'(sja)* 'entangle, mix up' and *перетасовать/pere-tasovat'* 'shuffle (cards)':

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<sup>80</sup> [Дмитрий Быков. Орфография (2002)]

<sup>81</sup> [Геннадий Горелик. Андрей Сахаров. Наука и свобода (2004)]

<sup>82</sup> [Аркадий Вайнер, Георгий Вайнер. Я, следователь... (1968)]

- (63) Служкин взял у Градусова колоду, *перетасовал/pere-tasoval* и разбросал карты.<sup>83</sup>

'Služkin took the deck from Gradusov, **shuffled** the cards and dealt them out.'

Although overlap is limited with the prefix *pere-*, it is systematic in that it involves a coherent subset of the radial category. Furthermore, the pattern of non-overlapping meanings is logical, with meanings that involve comparisons like SUPERIORITY, OVERDO, and REDO, and quantification, as in SERIATIM and THOROUGH.

## 2.6.2. *pod-* APPLY TO BOTTOM

The radial category of *pod-* is established on the basis of sixty-three Specialized Perfectives and twelve Complex Act Perfectives. The prototypical meaning is APPLY TO BOTTOM, in which something is brought up under another object. A neighboring meaning expresses HORIZONTAL APPROACH, using a horizontal rather than vertical orientation. ADJUST brings an item up to the standard of another object. The remaining three meanings focus on the reduced size of the action, which can be seen as an INCREMENT, as something done SECRETLY, or as a MINIMAL action.

Only five Natural Perfectives are prefixed in *pod-*, four of them in the prototypical APPLY TO BOTTOM meaning and one in the ADJUST meaning. This excludes both HORIZONTAL APPROACH and all the meanings that express reduced quantity.

Twenty-six Specialized Perfectives are found in the APPLY TO BOTTOM meaning, but probably because most motion verbs refer to horizontal motion, only two of these are motion verbs: *подползти/pod-polzti* 'creep up under' (*ползти/polzti* 'creep') and *подвести/pod-vesti* 'place at the bottom' (*вести/vesti* 'lead'). Other examples of Specialized Perfectives include: *подбить/pod-bit'* 'beat from underneath (repair a sole; bruise)' (*бить/bit'* 'beat'), *подставить/pod-stavit'* 'place under' (*ставить/stavit'* 'place'), *подсветить/pod-svetit'* 'light from beneath' (*светить/svetit'* 'light'), *подписать(pся)/pod-pisat'(sja)* 'sign' (*писать/pisat'* 'write'), *поддержать/pod-deržat'* 'support' (*держать/deržat'* 'hold'), and *подбодрить/pod-bodrit'* 'cheer up' (*бодрить/bodrit'* 'cheer'). Three

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<sup>83</sup> [Алексей Иванов. Географ глобус пропил (2002)]

of the four Natural Perfectives in this meaning are built from simplex verbs that refer to actions that apply to the bottoms of things, namely *подковать/pod-kovat'* 'shoe (a horse)', *подмести/pod-mesti* 'sweep (a floor)', and *подытожить/pod-itožit'* 'sum up'. There is also one Natural Perfective representing the domains of emotional and social support: *подфарить/pod-farit'* 'bring luck, get lucky'.

HORIZONTAL APPROACH is more appropriate for verbs of motion, and we find eleven of them here, like *подбежать/pod-bežat'* 'run up to' (*бежать/bežat'* 'run') and *подойти/pod-jti* 'walk up to' (*идти/idti* 'walk'), plus three other verbs: *подозвать/pod-zvat'* 'call up to, beckon' (*звать/zvat'* 'call'), *подкраситься/pod-krast'sja* 'sneak up to' (*краситься/krast'sja* 'sneak'), and *подтянуть(ся)/pod-tjanut'(sja)* 'pull up to' (*тянуть(ся)/tjanut'(sja)* 'pull'). No Natural Perfectives are formed in this meaning.

In the ADJUST meaning we find seven Specialized Perfectives such as *подогнать/pod-gnat'* 'adjust to, fit to' (*гнать/gnat'* 'chase'), *подыграть/pod-igrat'* 'play into someone's hand' (*играть/igrat'* 'play'), and *подстроить(ся)/pod-stroit'(sja)* 'adjust (oneself) to, fit to' (*строить/stroit'* 'build'). One Natural Perfective expresses this meaning: *подготовить(ся)/pod-gotovit'(sja)* 'prepare, get ready for'.

INCREMENT is found with eight Specialized Perfectives, among them: *подсолить/pod-solit'* 'add more salt to' (*солить/solit'* 'salt'), *подстроить/pod-stroit'* 'add on (e.g., a porch to a house)' (*строить/stroit'* 'build'), *подкрасить(ся)/pod-krasit'(sja)* 'tint, touch up (make up)' (*красить(ся)/krasit'(sja)* 'paint'), and *подработать/pod-rabotat'* 'earn additionally' (*работать/rabotat'* 'work'). No Natural Perfectives are formed in this meaning.

SECRETLY focuses on actions that are hard to detect or underhanded. Eight Specialized Perfectives are found in this meaning, among them: *подсмотреть/pod-smotret'* 'spy on' (*смотреть/smotret'* 'watch'), *подговорить/pod-govorit'* 'incite' (*говорить/govorit'* 'talk'), and *подделать/pod-delat'* 'fake, forge' (*делать/delat'* 'do'). No Natural Perfectives are formed in this meaning.

In the MINIMAL meaning we find twelve Complex Act Perfectives which present actions with minimal impact, as in: *подстричь(ся)/pod-strič'(sja)* 'trim' (*стричь(ся)/strič'(sja)* 'cut'), *подтаить/pod-tajat'* 'thaw a little' (*таить/tajat'* 'thaw'), *подпортить/pod-portit'* 'spoil slightly' (*портить/portit'* 'spoil'), and *подождать/pod-ždat'* 'wait for a little while'

(ждамъ/ždat' ‘wait’). No Natural Perfectives are formed in this meaning.

It is fair to say that overlap is systematic with *pod-* since it focuses on the prototype and a neighboring meaning. Natural Perfectives are missing in the parts of the radial category where they would not be expected, namely in meanings that restrict the quantity of the action or make a specific requirement on its direction.

### 2.6.3. *pere-* and *pod-* and Corollary 1 of the Overlap Hypothesis

Though *pere-* and *pod-* show the least overlap between the meanings of the prefixes and the simplex verbs, these two prefixes give positive evidence that overlap exists and that it is systematic, because it always involves the prototypical meaning and a coherent subset of meanings.

## 2.7. Summary of Radial Category Profiling Analysis of Small Prefixes

This chapter presents a principled data-based test of Corollary 1 of the Empty Prefix vs. Overlap Hypotheses. The Empty Prefix Hypothesis is the null hypothesis, according to which we expect to find no pattern of overlap between the meanings of prefixes and the meanings of verbs that form Natural Perfectives via prefixation. The Overlap Hypothesis is the alternative hypothesis, according to which we expect to find extensive and systematic overlap between the meanings of prefixes and the meanings of verbs that form Natural Perfectives via prefixation.

This test is principled in that it takes as its point of departure an independent classification of verbs and applies a consistent methodology. The classification of verbs as Natural Perfectives is based on the data aggregated from authoritative sources (see 1.4). The methodology extracts from the Russian National Corpus all other prefixed perfectives (Specialized and Complex Act) of comparable frequency and structure. The presence of meaning in the Specialized (and Complex Act) Perfectives is uncontroversial, so it is possible to establish for each prefix a radial category of meanings based on these uses. Each radial category is then compared with the meanings of the simplex verbs that form Natural Perfectives with the given prefix.

All eleven case studies in this chapter support the Overlap Hypothesis. Overlap is found in a total of fifty out of sixty-seven meanings (75%). For two prefixes overlap is complete, covering all meanings in

the radial category: *u-* and *v-*. For seven prefixes overlap includes most meanings in the radial category: *raz-*, *pri-*, *ot-*, *v(o)z-*, *o(b)-*, *vy-*, and *iz-*. Two prefixes show overlap only in a minority of meanings: *pere-* and *pod-*. In all instances where overlap is incomplete, the prototypical meaning plus a coherent subset of neighboring meanings exhibit overlap. Thus overlap is both extensive and systematic. There is also a clear logic to the pattern of meanings excluded from overlap. The meanings where we do not find Natural Perfectives are incompatible with simple perfectivization in that they involve negation, comparison, quantification, or some other special qualification.

This large-scale study facilitates comparisons across prefixes. For example, *u-*, *ot-*, *raz-*, and *vy-/iz-* all have meanings that might be glossed as “from,” but each prefix brings its own nuance to the notion of separation. *U-* takes us away “from” somewhere to a place that is beyond the horizon of accessibility, below it in a sense, and also more controlled. *Ot-* does not go so far, focusing only on the initial stage of departure, removal of contact. *Raz-* assumes that the “from” movement is distributed among many objects or parts of an object. *Vy-* is more focused on exiting a container; this is also possible for *iz-*, but here we are likely to encounter implications of emptying, namely exhaustion. *V-, pri-,* and *pod-* can describe motion “to,” but *v-* focuses on entering a container, *pri-* is more general or external, and *pod-* emphasizes going to something that is larger and therefore “up.” Both *raz-* and *v(o)z-* can refer to agitation, but *raz-* does so in terms of swelling and spreading, whereas for *v(o)z-* the focus is upward rather than apart. Like *v(o)z-*, *pod-* can refer to a vertical dimension, but *pod-* comes from beneath. *Pod-* and *pri-* both have a diminutive nuance, in that they can both refer to doing something just a little bit, and they are very close, but *pri-* suggests a reduction in intensity. Both *ot-* and *raz-* can have Specialized Perfectives that refer to undoing a previous action; *ot-* is more focused on concrete attachment, as in *отвинтить(ся)/ot-vintit'(sja)* ‘unscrew’ (*винтить/vintit'* ‘screw’), whereas *raz-* is more diverse and appears with a larger number of verbs, as in *развить(ся)/raz-vit'(sja)* ‘uncurl’ (*вить(vit'*) ‘twist, wind’) and *разучиться/raz-učit'sja* ‘forget how to do’ (*учить(ся)/učit'(sja)* ‘learn’). Four prefixes can be used to describe the focusing of perception, here illustrated with Specialized Perfectives of *смотреть/smotret'* ‘watch’ prefixed in *u-, v-, raz-,* and *pri-*. *U-* directs attention “away” toward an object in *усмотреть/u-smotret'* ‘keep an eye on’. With *v-* it is as if one “enters” the object:

*всмотреться/v-smotret'sja* ‘scrutinize, peer into’. *Raz-* is used to perceptually “unpack” the information in the object: *рассмотреть/raz-smotret'* ‘discern, make out’. *Pri-* merely brings attention to the object: *присмотреться/pri-smotret'sja* ‘look closely at’. The overall range of meanings in each radial category contextualizes the way each meaning is interpreted with given simplex verbs. In other words, when a prefix perfectivizes a verb, it brings along its radial category as “baggage.”

We claim that the prefixes bring along their radial category “baggage” even when the only effect is to perfectivize a verb, namely that prefixes retain their meanings even when they form Natural Perfectives. The effect of the prefix on the verb is minimized in Natural Perfectives due to overlap. Each prefix selects the simplex verbs that conform best to the meanings in its radial category. Overall this suggests that one function of prefixes that form Natural Perfectives is to sort the perfectivizable simplex verbs into groups that reflect their compatibility with the meanings of the prefixes, which is what we claim in chapter 7. However, we have explored only eleven of the sixteen prefixes at this point. Our next task is to see whether there is evidence of meaning in Natural Perfectives among the remaining five prefixes, and that is the topic of chapter 3.



## CHAPTER 3

## Big Prefixes: Semantic Profiling

Like chapter 2, this chapter aims to prove that the prefixes retain their meanings when they form Natural Perfectives. Chapter 2 analyzed the eleven “small” prefixes using the radial category profiling method. In this chapter we analyze the remaining five “big” prefixes, *po-*, *s-*, *na-*, *za-*, and *pro-*, using the semantic profiling method.<sup>1</sup> Whereas the big prefixes pose a challenge for radial category profiling because they combine with a large number of verbs, this abundance is actually an advantage for semantic profiling. Semantic profiling requires data in larger quantities than are available for the small prefixes. Thus the two methods are complementary.

Semantic profiling is the analysis of the distribution of semantic tags. As described in more detail below, the Russian National Corpus (RNC) contains semantic tags that classify verbs according to their meanings. We thus have access to an independent classification of the meanings of verbs, and it is possible to see how these classifications are distributed across the prefixes used to form Natural Perfectives. Given this resource, we can state relevant corollaries for the Empty Prefix and Overlap Hypotheses.

### 3.1. Corollaries to Be Tested

**Corollary 2 of the Empty Prefix Hypothesis:** Because prefixes have no meaning in Natural Perfectives, there should be no relationship between the prefixes and the distribution of semantic tags of verbs.

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<sup>1</sup> Like radial category profiling (see chapter 2), semantic profiling is a specific type of behavioral profiling (see Divjak and Gries 2006; Gries and Divjak 2009). In the present study semantic classes as tagged in the Russian National Corpus are the main parameter.

**Corollary 2 of the Overlap Hypothesis:** Because prefixes retain their meaning in Natural Perfectives, there should be a relationship between the prefixes and the distribution of semantic tags of verbs. Each prefix should have a unique meaning in terms of the semantic tags it attracts or repulses.

From the perspective of the Empty Prefix Hypothesis, there is no reason to expect to find any pattern in the semantic tags of the verbs that would correspond to the choice of prefix. The Overlap Hypothesis on the contrary predicts that we should find patterns. In fact, we expect each prefix to be associated with a unique semantic profile of tags.

Our semantic profiling analysis has two parts. In the first part we look at the distribution of semantic tags for Natural Perfectives formed with *po-*, *s-*, *na-*, *za-*, and *pro-* and submit these results to statistical tests for significance, effect size, and the degree of attraction (or repulsion) for each combination of prefix and semantic tag.

The statistical tests we apply are the chi-square, Cramer's V, and Fisher Test. The steps in the statistical analyses are documented, with comments, in R scripts available on our website ([http://emptyprefixes.uit.no/semantic\\_eng.htm](http://emptyprefixes.uit.no/semantic_eng.htm)). The reader is welcome to download the scripts and run them on any computer. It is, however, not necessary to run the scripts in order to follow the description below, which presents all of the results and their interpretation.

This study includes 382 verbs, and a full list of these verbs, arranged according to the five prefixes and the semantic tags, is available on our website ([http://emptyprefixes.uit.no/semantic\\_eng.htm](http://emptyprefixes.uit.no/semantic_eng.htm)).<sup>2</sup> The second part of this study is a detailed analysis of the simplex verbs that are unambiguously associated with only one of the five big prefixes and only one semantic tag. The meanings of these verbs and the meanings of the prefixes are compared. However, before turning to

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<sup>2</sup> Note that the policy for the counting of verbs with and without the reflexive *-ся/сь* is different for this study than for the study reported in chapter 2. Whereas in chapter 2 verbs with and without reflexive *-ся/сь* were collapsed into single entries in cases where they differed only in transitivity, in this study, when both a reflexive and a non-reflexive version of a verb do exist, they are counted separately, as shown in our lists. However, this difference makes no appreciable difference in our study, since there are only nine stems in this dataset that appear in both reflexive and non-reflexive versions. A more detailed version of this study is presented in Janda and Lyashevskaya forthcoming.

the analysis we need to know something about the semantic tags in the RNC.

### 3.2. Semantic Tags in the Russian National Corpus

Classification of the meanings of words is a complex issue. Fortunately the RNC uses a system of semantic tags that represents the collective expertise of the Moscow Semantic School.<sup>3</sup> These tags have been developed and assigned independently, thus achieving a level of objectivity we could not provide if we were to devise a system and tag verbs ourselves. Semantic tags have not been assigned to all words in the RNC, but 92% of the Natural Perfectives attested in the RNC do have a semantic tag and we base our semantic profiling analysis on them.

In principle the tagging system is designed to be universal, so it is applied to all kinds of words, not just Natural Perfectives. The descriptions and examples listed in this paragraph are quoted from the RNC website. There are twenty-seven semantic tags for verbs in the RNC. About half of the tags (fourteen of them) are connected to larger groups. For example, there are three tags labeled ‘impact’: a generalized group labeled merely ‘impact’ (examples *битъ/bit’* ‘hit’, *колотъ/kolot’* ‘stab’, *вытиратъ/vy-tirat’* ‘wipe, rub’), plus two more specialized sub-groups: ‘impact:creat’ (‘creation of a physical object’, such as *выковать/vy-kovat’* ‘forge’, *смастерить/s-masterit’* ‘craft, build’, *сшить/s-šit’* ‘sew’) and ‘impact:destr’ (‘destruction’, as in  *взорвать/vz-rvat’* ‘explode’, *сжечь/s-žeč’* ‘burn’, *зарезать/za-rezat’* ‘slaughter’).<sup>4</sup> Thirteen tags are ungrouped categories, and four of them are pertinent to our study. ‘Changest’ is described as ‘change of state or feature’ (examples: *взрослеть/vz-roslet’* ‘mature’, *богатеть/bogatet’* ‘get rich’, *расширить/raz-širit’* ‘spread’, *испачкать/iz-pačkat’* ‘make dirty’). ‘Behav’ is described as ‘human behavior’ (examples: *куролесить/kurolesit’* ‘play pranks’, *привередничать/pri-veredničat’* ‘act fussy’). ‘Sound’ is described simply

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<sup>3</sup> The system of semantic tags in the RNC is adapted from the work of the “Leksikograf” group (<http://lexicograf.ruslang.ru/>; cf. also Padučeva 2004; Kustova et al. 2005 and 2009), and more generally inspired by the work of Apresjan (2005). More description of the system and a list of all tags can be found at: <http://www.ruscorpora.ru/en/corpora-sem.html>.

<sup>4</sup> Other grouped tags are ‘move’ (subgroup: ‘move:body’), ‘be’ (subgroups: ‘be:exist’, ‘be:appear’, ‘be:disapp’), ‘loc’ (subgroup: ‘loc:body’), and ‘psych’ (subgroups: ‘psych:emot’, ‘psych:volit’). These tags are not pertinent to our study.

as 'sound' (examples: *гудеть/gudet'* 'buzz', *шелестеть/šelestet'* 'rustle'). And 'speech' is described simply as 'speech' (examples: *говорить/govorit'* 'talk', *советовать/sovetovat'* 'advise', *спорить/sporit'* 'argue', *карамбюрировать/kalamburit'* 'make puns'). For reasons explained below, our analysis is limited to this subset of the semantic tags used in the RNC.

### 3.3. Statistical Analysis

We want to see whether verbs with certain semantic tags show a preference for certain prefixes. This is similar to asking whether voters (= verbs) with certain religious affiliations (= semantic tags) show a preference for certain political candidates (= prefixes). A classic way of testing for this kind of relationship is by using the chi-square test and then checking for the effect size. The chi-square test compares the distribution in a sample of a population across various categories with the distribution one would expect if the categories were irrelevant and the distribution were random. In other words, the chi-square test looks at the distribution of votes for political candidates (= prefixes) across the categories of voters' religious affiliation (= semantic tags) and compares that with the distribution we would expect if there was no relationship between the two factors. The chi-square test asks the question: What is the chance that you could get the observed distribution (or one that is even more extreme) in your sample if there is no relationship, if religious affiliation (= semantic tags) has no effect on who people vote for (= prefixes)? If the chance is very small, then the effect is statistically significant, and it is safe to say that there is an effect, namely that voting preference (= prefixes) is related to religion (= semantic tags).

We need to make sure that our data conform to the limitations and assumptions of the chi-square test before we can do the statistical analysis. The chi-square test requires a minimum of five expected observations in each cell of a matrix and assumes that all observations are independent. We look at what each of these stipulations mean for our data regarding semantic tags and prefixes in turn.

A matrix is simply a table with rows and columns for categories like voters' religious affiliations and the candidates they voted for, and the number of voters in each cell of the table. So there would be one cell, let's say, showing the number of voters in the Protestant category who voted for the Democratic candidate. There is simply a limit on

how reliable the chi-square test is when there is very little data, and when fewer than five observations are expected in any cell given the overall quantity of data, we cannot rely on the chi-square test. It is this limitation that makes it impossible for us to extend semantic profiling to all of the prefixes that form Natural Perfectives. With sixteen prefixes and twenty-seven semantic tags, we would have a matrix of 432 cells, and we would need at least 2,160 prefixed Natural Perfectives in order to expect five of them in each cell, even if the distribution were entirely even. But there are only 1,981 prefixed Natural Perfectives in Russian, and the distribution is very uneven, ranging from 417 with *po-* to three with *v-*, so we would actually need much more data. The limitation on the chi-square test makes it necessary to focus only on the most frequent prefixes and the most frequent semantic tags. Over 63% of all Natural Perfectives in Russian are prefixed with *po-*, *s-*, *za-*, *na-*, and *pro-*; thus they provide the most data across the smallest number of prefixes. We also need to restrict the number of semantic tags to those for which we have the most data. If we take the semantic tags for which we have at least fifty verbs across the five prefixes, we have four categories for semantic tags: 'impact' (including also 'impact:creat' and 'impact:destr'), 'changest', and 'behav', plus a combined category of 'sound' and 'speech'.<sup>5</sup>

The voter analogy is also helpful in understanding the assumption of independent observations. If we hold an election, we will not allow any one voter to vote more than once. From the perspective of the chi-square test, multiple votes from one person are non-independent observations since of course a voter always has the same preferences and does not become a different person when another vote is cast. Similarly, if we were doing a study of religious affiliation and voting preferences, we wouldn't want to count a single voter twice just because his mother is Jewish and his father is Protestant and he lists both affili-

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<sup>5</sup> The 'impact' tag (including both 'impact:creat' and 'impact:destr') is the biggest class for our prefixes, with a total of 122 verbs. The next largest class is 'changest', which is tagged on 102 Natural Perfectives with the relevant prefixes. We merge the 'sound' and 'speech' classes on the grounds that they are all verbs denoting the making of sounds, with the latter being more specific to human beings. Together this combined class has 106 Natural Perfectives with our five prefixes. The next largest class is 'behav', with fifty-two Natural Perfectives. No other semantic class crosses our threshold of fifty.

ations. In both voting and the chi-square test, no individual should be represented more than once.

The assumption of independent observations means that we have to take two measures in order to make our data suitable for a chi-square analysis, because we have both verbs that select more than one prefix (prefix variation; see chapter 5) and verbs that have more than one semantic tag in the RNC. We have to eliminate all of the verbs that would cast multiple “votes,” either for prefixes or for semantic tags. After restricting the data to include only the five big prefixes and five semantic tags, and only verbs that take exactly one prefix and have exactly one semantic tag, we have 382 verbs distributed as shown in Table 1.

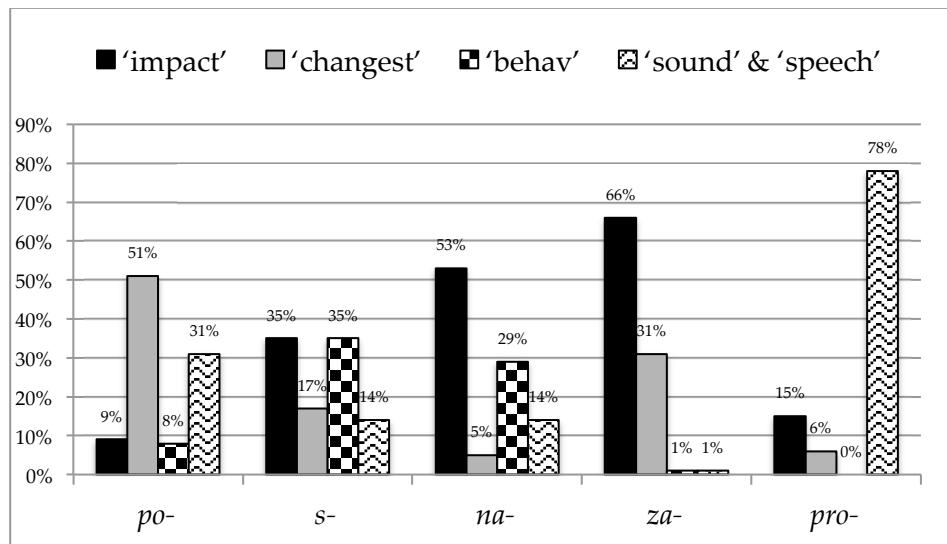
**Table 1.** Distribution of Prefixes across Semantic Tags

	<i>po-</i>	<i>s-</i>	<i>na-</i>	<i>za-</i>	<i>pro-</i>	Row Totals
‘impact’	11	23	31	47	10	122
‘changest’	62	11	3	22	4	102
‘behav’	11	23	17	1	0	52
‘sound’ and ‘speech’	37	9	8	1	51	106
Column Totals	121	66	59	71	65	Grand Total: 382

Although some of the values in Table 1 are less than five, these are observed values, not expected values, so they do not violate the limitation on the quantity of data needed to perform a chi-square analysis. The expected values are calculated on the basis of column and row totals. The lowest expected value is in the cell where the lowest column total, the prefix *na-*, intersects with the lowest row total, ‘behav’. Based on these totals, the expected value for *na*-prefixed verbs with the ‘behav’ tag is eight, which safely exceeds the necessary minimum of five. The fact that we actually have seventeen observations in that cell means, of course, that *na-* is actually associated with more than twice as many verbs with the ‘behav’ tag than we would expect. By contrast, although there are no *pro*-prefixed verbs with the ‘behav’ tag in our

dataset, the expected value there is nine, indicating that *pro-* repulses verbs with the semantic tag 'behav'.

Table 1 is visualized in Figure 1, where we use percentages in order to put the data on the same scale. The sum of all bars in each cluster is 100% ( $\pm 1\%$  due to rounding). It appears that the semantic profiles are different. *Po-* favors 'changest', while *pro-* is nearly entirely dominated by 'sound' and 'speech'. 'Impact' makes a strong showing in *s-*, *na-*, and *za-*, but the balance of other semantic tags is different for each one.



**Figure 1.** Semantic Profiles of *po-*, *s-*, *za-*, *na-*, and *pro-*

Although we can see differences among the prefixes in Table 1 and Figure 1, we need to perform a chi-square analysis and measure the effect size in order to find out whether these differences are significant and robust.

### 3.3.1. Statistical Significance and Effect Size

The p-value (probability value) of the chi-square test tells us the likelihood that we would get the observed distribution (or one that is even more uneven) if there was no relationship between semantic tags and prefixes. The chi-square value is 248, with 12 degrees of freedom (this

is related to the number of columns and rows in the matrix), and a p-value of  $2.2 \times 10^{-16}$ , which is another way of writing 0.00000000000000022.<sup>6</sup> Usually the threshold for significance in a chi-square test is 0.05, and only p-values that are lower than this indicate statistical significance. Our p-value is much lower than that, and is actually the lowest number that R can compute for the chi-square test. In other words, the result is statistically very significant.

One problem, however, with tests for statistical significance is that they only tell us how likely it is that we could get this distribution. A chi-square test does not tell us anything about how large the effect of the uneven distribution is. It is entirely possible to get a highly significant result that involves such a tiny difference in distributions that it is not worth reporting. Let's return to our voting preference vs. religious affiliation analogy and let's say that in a poll of millions of voters we discover a significant p-value (below 0.05) indicating that Jews have a consistent preference for the Democratic candidate, whereas Protestants prefer the Republican candidate. On the basis of this poll, the Democratic candidate is considering launching a special campaign to attract more Protestant votes. However, a measure of the effect size (0.001) shows that the difference is tiny, only 0.01% on either side, such that 50.01% of Jews will vote Democratic and 49.99% of Protestants will vote Republican. In a local election with one million voters of each affiliation, this is a difference of only 100 votes in either direction. Given this added piece of information, the Democratic candidate should probably not invest in a campaign targeting Protestants after all, but should look for another factor that yields a bigger effect size and is thus more decisive, say socioeconomic status.

Because the p-value alone does not tell us how big the difference is in our distribution, we need to measure the effect size. This is done by calculating the Cramer's V value. Theoretically the Cramer's V value can range from 0 to 1 and traditionally an effect size under 0.1 is considered too small to report. Robust effect sizes are evaluated according to the following scale: 0.1 is considered "small," 0.3 is considered

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<sup>6</sup> e-X is a shorthand way to say "move the decimal point X places to the left." So a p-value of  $2.2 \times 10^{-16}$  is 2.2 with the decimal point moved sixteen places to the left. We use this notation for reporting Fisher Test p-values in the next section as well.

“moderate,” and 0.5 is considered “large.”<sup>7</sup> The Cramer’s V value for our data is 0.8, which far exceeds the standard measure for a large effect.

We have thus found that the distribution of prefixes across semantic tags of verbs both is highly significant and has a large effect size. We can thus state with confidence that the differences we see in Figure 1 are robust and meaningful. There is indeed a relationship between the semantic tags of verbs and the prefixes that they choose to form Natural Perfectives. This finding supports the first prediction of Corollary 2 of the Overlap Hypothesis because there is a relationship between the prefixes and the distribution of semantic tags of verbs.

Now that we know that semantic tags play a role in the selection of prefixes, we can look further and discover what this means for each prefix. We do this by examining the pattern of attractions and repulsions between the prefixes and the semantic tags.

### 3.3.2. Attractions and Repulsions

The distribution of verbs across prefixes and semantic tags in Table 1 and the visualization in Figure 1 give us an idea of which prefixes are attracted to which semantic tags. But the data is distributed very unevenly, so it is hard to evaluate the strength of attraction or repulsion between a given semantic tag and a given prefix. For example, there are three cells in Table 1 where we find eleven verbs: *po-/’impact’*, *po-/’behav’*, and *s-/’changest’*. In all three of these cases, we have fewer verbs with the given prefix and semantic tag than would be predicted by the overall distribution. So *po-* is repulsed by both ‘impact’ and ‘behav’, and *s-* is repulsed by ‘changest’. If the value is the same, does this mean that there is the same level of repulsion? Let’s look at the values for *po-* first.

Look at the row totals in Table 1. There are 122 verbs with the ‘impact’ tag, but only fifty-two verbs with the ‘behav’ tag. So shouldn’t eleven out of 122 count as a stronger repulsion than eleven out of fifty-two? When we add *s-* into this comparison and look at the column totals, we note that there are also nearly twice as many verbs prefixed in *po-* as in *s-*. Certainly a value of eleven for *s-* should count as less of a

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<sup>7</sup> For more on interpretation of effect sizes, see Cohen 1988: 215–71, Cohen et al. 2003: 182, and King and Minium 2008: 327–30.

repulsion than a value of eleven for *po-*. Thus, we would expect that *po-* is more repulsed by ‘impact’ than by ‘behav’, and that the relationship between *s-* and ‘changest’ is an even weaker repulsion than the previous two. But we need a way to calibrate all of these values so that we can make meaningful comparisons.

The Fisher Test makes it possible for us to make comparisons across our uneven data. The Fisher Test takes into account the overall distribution of values in our table and, when applied to each cell, it can tell us the probability that each value could deviate even more from the expected value. This means that lower probabilities reflect stronger attractions and repulsions. Let’s return to our example of the three prefix/semantic tag combinations with eleven verbs each in Table 1. When we apply the Fisher test, we get these results: 0.0002 for *po-/’impact’*, 0.05 for *po-/’behav’*, and 0.3 for *s-/’changest’*. In other words, there is a one in 20,000 chance of finding fewer than eleven verbs with the ‘impact’ tag and the prefix *po-*, a 5% chance of finding fewer than eleven verbs with the ‘behav’ tag and the prefix *po-*, and a 30% chance of finding fewer than eleven verbs with the ‘changest’ tag and the prefix *s-*. The Fisher Test gives us exactly the order of expectations we formed on the basis of row and column totals, and in addition it gives us numerical values that can be compared. Table 2 on page 91 shows the Fisher Test p-values for all of the cells in Table 1, arranged according to strength of attraction marked [+] or repulsion marked [-].

Table 2 follows the same logic as the standard interpretation of probability values, where only values less than 0.05 are considered significant. Therefore all values of 0.05 and higher are not counted as either an attraction or a repulsion, so they are listed in the “Neutral” column, with the most neutral relationship at the top, *s-/’changest’*. Among the attractions, *pro-/’sound’* and ‘speech’ has the lowest Fisher Test p-value, and is thus the strongest attraction. Other progressively weaker attractions appear in that column. The strongest repulsion is for *za-/’sound’* and ‘speech’, and progressively weaker repulsions are listed below that one.

In Table 3 on page 91 the examples of attractions and repulsions are arranged to show what they mean in terms of the semantic profiles of prefixes. Relationships involving Fisher Test p-values on the order of e-5 (1/100,000) or lower are boldfaced, since these are strongest.

**Table 2.** Attractions, Neutral Relationships, and Repulsions between Prefixes and Semantic Classes

Attractions		Neutral		Repulsions	
Prefix/ Semantic Tag	Fisher Test <i>p</i> -value	Prefix/ Semantic Tag	Fisher Test <i>p</i> -value	Prefix/ Semantic Tag	Fisher Test <i>p</i> -value
<i>pro</i> -/'sound' and 'speech'	[+]5.7e-25	<i>s</i> -/'changest'	[-]0.3	<i>za</i> -/'sound' and 'speech'	[+]2.0e-6
<i>po</i> -/'changest'	[+]1.3e-18	<i>pro</i> -/'impact'	[-]0.1	<i>po</i> -/'impact'	[+]0.0002
<i>za</i> -/'impact'	[+]1.5e-15	<i>s</i> -/'sound' and 'speech'	[-]0.1	<i>pro</i> -/'behav'	[+]0.0004
<i>s</i> -/'behav'	[+]2.1e-8	<i>na</i> -/'sound' and 'speech'	[-]0.1	<i>na</i> -/'changest'	[+]0.001
<i>na</i> -/'impact'	[+]5.3e-7	<i>po</i> -/'behav'	[-]0.05	<i>za</i> -/'behav'	[+]0.002
<i>na</i> -/'behav'	[+]5.5e-5			<i>pro</i> -/'changest'	[+]0.002
<i>po</i> -/'sound' and 'speech'	[+]0.0008				
<i>za</i> -/'changest'	[+]0.01				
<i>s</i> -/'impact'	[+]0.015				

**Table 3.** Semantic Profiles of Prefixes in Terms of Attractions, Neutral Relationships, and Repulsions of Semantic Tags

	<i>po</i> -	<i>s</i> -	<i>na</i> -	<i>za</i> -	<i>pro</i> -
Attracted	'changest', 'sound' and 'speech'	'behav', 'impact'	'impact', 'behav'	'impact', 'changest' and 'speech'	'sound' and 'speech'
Neutral	'behav'	'sound' and 'speech', 'changest'	'sound' and 'speech'		'impact'
Repulsed	'impact'		'changest'	'behav', 'sound' and 'speech'	'changest', 'behav' and 'speech'

Now we can clearly identify the attractions and repulsions for each prefix. In terms of attractions, *po-* is most attracted to ‘changest’, *s-* is most attracted to ‘behav’, *na-* is strongly attracted to both ‘impact’ and ‘behav’, *za-* is most attracted to ‘impact’, and *pro-* is most attracted to ‘sound’ and ‘speech’. This result supports the second part of Corollary 2 of the Overlap Hypothesis, with the expectation that each prefix should have a unique meaning that predicts which semantic tags it attracts or repulses.

Thus far we have only been looking at numbers. In the next section we look at the verbs that stand behind these numbers.

### 3.4. Semantic Analysis

The point of this chapter is to show that the prefixes in Natural Perfectives have meanings, so it is necessary to compare the meanings of the prefixes and the base verbs. To get a handle on the meanings of the prefixes, we summarize the results of previous scholarship.<sup>8</sup> We use Table 3 as our guide and go through each of the combinations of prefixes and semantic tags in turn. Thus we start with the prefix *po-* and look first at the attractions. This means that we look first at the verbs with the semantic tag ‘changest’ that form their Natural Perfectives with *po-*, then at the verbs with the semantic tags ‘sound’ and ‘speech’ that form their Natural Perfectives with *po-*, etc. To supplement this analysis, the reader is encouraged to look at the list of verbs in the study (found at [http://emptyprefixes.uit.no/semantic\\_eng.htm](http://emptyprefixes.uit.no/semantic_eng.htm)), which is arranged according to the same order as our analysis. Following our conventions in previous chapters, we list and give meanings for simplex verbs only when we cite examples of Specialized and Complex Act Perfectives; the meaning of the simplex is the same as the meaning of the corresponding Natural Perfective.

Even verbs with semantic tags that are repulsed by a prefix show meanings that strongly overlap with the meanings of the prefix. A given prefix is consistently associated with verbs that have a certain kind of meaning, which is true not just for the semantic tags attracted to that prefix, but also for the neutral semantic tags and even for those

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<sup>8</sup> The meanings scholars have suggested for *po-*, *s-*, *za-*, *na-*, and *pro-* are primarily based on their meanings in Specialized, Complex Act, and Single Act Perfectives.

that are repulsed from the prefix. The point is that the prefix seeks out verbs with a certain meaning, and those verbs will be more plentiful among the attracted semantic tags, but not necessarily absent among other tags. Our goal is to show what those consistent patterns are.

### 3.4.1. Semantic Profile of *po-*

The main meanings of *po-* are RESULT and SOME, with lesser meanings DISTRIBUTE and START.<sup>9</sup> The RESULT meaning is best represented among Natural Perfectives, as in *посмотреть/po-smotret'* *фильм* 'watch a film (to the end)'. The DISTRIBUTE meaning is found among Specialized Perfectives that specify that many or all objects are affected, as in *небречь/po-brech'* 'throw all or many of' (from *бречь/brech'* 'throw'). The SOME meaning is most often found with Complex Act Perfectives and usually refers to doing something for a while, as in *наплакать/po-plakat'* 'cry for a while' (from *плакать/plakat'* 'cry'). The START meaning is also found with Complex Act Perfectives and tells us that a state or action has commenced, as in *полюбить/po-ljubit'* 'come to love, start loving' (from *любить/ljubit'* 'love').

As shown below, the *po*-prefixed Natural Perfectives in our study overlap with both the RESULT and SOME meanings, but not with the DISTRIBUTE and START meanings. This is logical because the DISTRIBUTE meaning focuses on multiple actions rather than on the completion of a single action, and START focuses only on the beginning of an action rather than on completion. In short, the Natural Perfectives are found with those meanings that are most compatible with the perfectivizing function of Natural Perfectives.

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<sup>9</sup> Scholars call these four meanings by various names (Dickey 2007, LeBlanc 2010, Dmitrieva 1991); most often in English they are called "resultative," "delimitative," "distributive," and "ingressive." A fifth meaning, "attenuative," is listed in grammars, but LeBlanc found no "attenuative" examples in a large corpus study, so it seems that this meaning is rare.

**ATTRACtIONS: 62 ‘changest’ verbs, 37 ‘sound’ and ‘speech’ verbs (35 ‘speech’ and 2 ‘sound’)**

The verbs with the ‘changest’ tag are nearly all motivated by adjectives, as we see in verbs like *поглупеть/po-glupet'* ‘become stupid’ from *глупый ‘stupid’*, *поголубеть/po-golubet'* ‘turn blue’ from *голубой ‘blue’*, and *подешеветь/po-deševet'* ‘become cheaper’ from *дешевый ‘cheap’*.<sup>10</sup> About half these verbs refer to a change of color. The *po-/changest* verbs are special in that they refer to change along a scale and any amount of change can be involved, either a radical change as in example (1), or a change of a lesser amount, as in example (2). These ‘changest’ verbs can express both RESULT and SOME, and thus overlap with both meanings of the prefix.

- (1) *В момент он сам поголубел/po-golubel, и глаза тоже сделались прозрачные и пронзительные.*<sup>11</sup>  
‘At that moment he **turned blue** himself, and his eyes also became transparent and penetrating.’
- (2) *Боюсь, что у вас тоже немного поголубел/po-golubel носик...*<sup>12</sup>  
‘I am afraid that your nose also **turned** somewhat **blue...**’

The thirty-five ‘speech’ verbs describe either short events like *поблагодарить/po-blagodarit'* ‘thank’, or events that can take more time, like *посоветовать/po-sovetovat'* ‘give advice’. The shorter events are examples of simple RESULTS, as in (3), whereas longer events like (4) overlap with the SOME meaning of the prefix.

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<sup>10</sup> One verb has a noun for its root: *носахарить/po-saxarit'* ‘sugar’, from the noun *saxap* ‘sugar’. Three verbs have verbal roots: *посечься/po-seč'sja* ‘tear’, *потрескаться/po-treskat'sja* ‘split’, and *поспеть/po-spet'* ‘ripen’, but note that this last verb is closely associated with the adjective *спелый ‘ripe’* and rarely used due to homonymy with *спеть/s-pet'* ‘sing’. All the other *po*-prefixed verbs with the ‘changest’ tag are built from adjectival roots.

<sup>11</sup> [Юрий Петкович. Явление ангела (2001)]

<sup>12</sup> [Самуил Маршак. Двенадцать месяцев (1943)]

- (3) —Спасибо, очень хорошее вино, — **поблагодарила/ро-blagodarila** Таня, вернув стакан.<sup>13</sup>  
 ““Thank you, it’s very good wine,” Tanja **said thanks**, and handed the glass back.’
- (4) **Посоветовал/ро-sovetoval**, как менять занятия; как читать вслух для лучшего усвоения; какими средствами восстанавливать мозговые силы.<sup>14</sup>  
 ‘He **advised** me on how to alternate between activities, on how to read out loud so that the material would be absorbed better, and on ways to restore brain function.’

The two verbs with the ‘sound’ tag are *посмеяться/po-smejat’sja* ‘laugh’ and the colloquial *позвониться/po-zvonit’sja* ‘ring’.<sup>15</sup> The first verb uses the SOME meaning, while the second employs the RESULT meaning.

#### NEUTRAL: 11 ‘behav’

The verbs in this group are similar to those with the ‘changest’ tag in both their formation and the meanings they express. Most verbs in this group are built from adjectives and nouns, like *пожадничать/по-žadničat’* ‘act greedy’ from *жадный* ‘greedy’ and *полениться/по-lenit’sja* ‘act lazy’ from *лень* ‘laziness’. Most verbs in this group can have either a RESULT meaning as in (5) or refer to doing something for a while, and thus overlap with SOME, as in (6). There are some other verbs that merely describe a RESULT, like *послушаться/po-slušat’sja* ‘obey’, see example (7).

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<sup>13</sup> [Людмила Улицкая. Путешествие в седьмую сторону света // Новый Мир, № 8–9, 2000]

<sup>14</sup> [А. И. Солженицын. Молодняк (1993)]

<sup>15</sup> The verb *позвониться/po-zvonit’sja* ‘ring’ is extremely rare, though it is listed in dictionaries and attested in the Russian National Corpus.

- (5) Куколев **пожадничал/ро-žadničal**, недодал обещанного, и Петров пригрозил ему, что отомстит.<sup>16</sup>  
 'Kukolev **acted greedy**, he didn't give the amount he had promised, and Petrov threatened to take revenge on him.'
- (6) Я встретился с некоторыми из авторов, не **поленился/ро-lenilsja** проверить ряд ссылок, могу рекомендовать этот труд к прочтению.<sup>17</sup>  
 'I met with several of the authors, and **even took the time (lit. did not act too lazy)** to double-check many of the references, so I can recommend the book.'
- (7) — Ты выпей залпом, станешь тверже. Мовчун **послушался/ро-slušalsja** и выпил залпом.<sup>18</sup>  
 "'Drink it all up in one gulp, you will become firmer.' Movčun **obeyed** and drank it all up in one gulp.'

#### REPULSION: 11 'impact' verbs

Verbs in this group either refer to well defined tasks like *нобрить(ся)/'po-brit'(sja)* 'shave' and *подоить/ro-doit'* 'milk' and use the RESULT meaning as in (8), or refer to various kinds of touching like *пощупать/ро-ščupat'* 'touch' and *пощекотать/ро-ščekotat'* 'tickle' and can express both RESULT and SOME as in (9).

- (8) Утром **подоила/ро-doila** корову, прибралась в комнатах, вымыла посуду, сварила обед...<sup>19</sup>  
 'In the morning she **milked** the cow, cleaned up the rooms, washed the dishes, cooked dinner...'

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<sup>16</sup> [Леонид Юзефович. Дом свиданий (2001)]

<sup>17</sup> [Исраэль Шамиль. Еврейская ксенофобия (2004) // «Наш современник», 2004.11.15]

<sup>18</sup> [Андрей Дмитриев. Призрак театра (2002–03) // «Знамя», 2003]

<sup>19</sup> [Владимир Арро. Дом прибежища // «Звезда», 2002]

- (9) Таня обняла его за шею, **пощекотала/po-ščekotala** за ушами.<sup>20</sup>

'Tanja put her arms around his neck and **tickled** him behind the ears.'

Many of the verbs that use *po-* to form their Natural Perfectives describe changes or actions that can be measured in terms of how much change takes place or how long they last. The actions they describe can vary in length, but none of them are instantaneous. It is probably the measurability of the SOME meaning of *po-* that is less attractive for the 'behav' semantic tags, since most verbs describing behavior do not indicate any quantity. The verbs that do appear with *po-* are exceptions to this rule, either verbs that describe quantizable behaviors or uses that just describe a RESULT. The 'impact' verbs are even more resistant to both RESULT and SOME, but even here we find compatible verbs.

### 3.4.2. Semantic Profile of *s-*

There are three meanings associated with the prefix *s-*: TOGETHER, DOWN, and ONCE.<sup>21</sup> The TOGETHER meaning brings objects or people to one place, as in verbs like the Specialized Perfective *собрать/s-brat'* 'gather' (from *брать/brat'* 'take'). In the DOWN meaning *s*-prefixed Specialized Perfectives describe movement off or away from something in a downward direction, as in verbs like *сбросить/s-brosit'* 'throw down' (from *бросить/brosit'* 'throw'). The TOGETHER and DOWN meanings are related to each other because when something comes TOGETHER it also goes DOWN as it becomes more compact, as we see in a Natural Perfective like *сгустить/s-gustit'* 'thicken'. The third meaning, ONCE, appears in Single Act Perfectives and usually describes things that people do just one time, as in *сглупить/s-glupit'* 'do one stupid thing' (from *глупить/glupit'* 'act stupid'). We see that the

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<sup>20</sup> [Людмила Улицкая. Путешествие в седьмую сторону света // Новый Мир, № 8–9, 2000]

<sup>21</sup> Dickey (2005) gives a historical overview of the development of the meanings of *s-*. He shows that the "centripetal/together" meaning and the "downward/ablative" meaning were already present in Old Church Slavonic and together contributed to the development of more resultative uses. The "semelfactive" (= ONCE) meaning is a Russian innovation.

Natural Perfectives are represented among all three meanings of *s-*, though they are distributed very differently across the semantic tags.

#### ATTRACTION: 23 'behav' verbs, 23 'impact' verbs

The strongest attraction is between *s-* and the 'behav' semantic tag. There is a natural affinity here between human behavior and doing something just ONCE. Most verbs in this group can also mean to do something ONCE, in addition to serving as Natural Perfectives, as in verbs like *схитрить/s-xitrit'* 'act cunningly' *смалодушичать/s-malodušničat'* 'act like a coward'. Example (10) shows how these Natural Perfectives can overlap with the ONCE meaning:

- (10) Стыдно теперь вспоминать, но в ту минуту я  
*смалодушичал/s-malodušničal.*<sup>22</sup>

'It's embarrassing to think of it now, but at that moment I **acted like a coward.**'

The majority of verbs with the 'impact' tag describe bringing pieces TOGETHER to make a whole, as in *сшить/s-šit'* 'sew', *связать/s-vjazat'* 'tie, knit', and *смастерить/s-masterit'* 'craft, build'. We also find here the generic verb *сделать/s-delat'* 'do, make'. There are in addition a few verbs in this group that describe movement DOWN, as in *срубить/s-rubit'* 'chop (down)' and *сжечь/s-žeč'* 'burn (down)'. These examples illustrate both the TOGETHER and the DOWN meanings with *s-/impact* verbs in examples (11) and (12), respectively:

- (11) Лена *сшила/s-šila* кукле изящное платье...<sup>23</sup>

'Lena **sewed** a lovely dress for the doll...'

- (12) ...они *срубили/s-rubili* его лучшую яблоню.<sup>24</sup>

'...they **chopped down** his best apple-tree.'

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<sup>22</sup> [Анатолий Рыбаков. Тяжелый песок (1975–77)]

<sup>23</sup> [Тут белолицая Наталья и величавая Рашиль (2004) // «Народное творчество», 2004.10.18]

<sup>24</sup> [Г. А. Газданов. Вечер у Клэр / начало романа (1930)]

**NEUTRAL: 9 ‘speech’ verbs, 11 ‘changest’ verbs,**

Most of the ‘speech’ verbs that use the *s-* prefix are similar to the ‘be-hav’ verbs: they describe human verbal behavior that can happen ONCE, as in *сострить/s-ostrit'* ‘make a witty remark’ and *скаламбуриТЬ/s-kalamburit'* ‘make a pun’. In addition some verbs describe putting words TOGETHER, as in *сформулировать/s-formulirovat'* ‘formulate’. Here are examples for both the ONCE meaning (13) and the TOGETHER meaning (14):

- (13) *Когда дошла речь до меня, я коротко сострил/s-ostril, что планов много, но мало денег.*<sup>25</sup>  
 ‘When it was my turn to speak, I **made** a short **witty remark** to the effect that I had a lot of plans but little money.’
- (14) *Архимед сформулировал/s-formuliroval и доказал теорему о сумме квадратов членов арифметич. прогрессии.*<sup>26</sup>  
 ‘Archimedes **formulated** and proved the theorem about the sum of the squares of the members of an arithmetic progression.’

The ‘changest’ verbs that form their Natural Perfectives with *s-* describe processes of aging, rotting, and otherwise becoming more compact, thus combining TOGETHER with DOWN, as in *состариться/s-stari'sja* ‘age’, *сгнить/s-gnit'* ‘rot’, and *сконденсироваться/s-kondensirovat'* ‘condense’.

- (15) *...хата давно уже сгнила/s-gnila, остатки ее разобрали на дрова...*<sup>27</sup>  
 ‘...the hut **rotted away** long ago, and people took apart the remains for firewood...’

We find evidence of overlap with all three meanings of the prefix *s-*, which is used to form Natural Perfectives from simplex verbs that are compatible with TOGETHER, DOWN, and ONCE. Most prominent are

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<sup>25</sup> [Николай Климонтович. Далее — везде (2001)]

<sup>26</sup> [А. Н. Колмогоров. Математика (1954)]

<sup>27</sup> [Василь Быков. Знак беды (1982)]

verbs that describe behaviors (including speech) that can be performed just ONCE, though TOGETHER is also relevant to speech. TOGETHER is characteristic of verbs with the ‘impact’ and ‘changest’ tags, though DOWN is relevant for these groups as well.

### 3.4.3. Semantic Profile of *na-*

The prefix *na-* is associated with two meanings, SURFACE and ACCUMULATE, and these two meanings are related to each other because when you apply something to a surface it accumulates.<sup>28</sup> Examples of Specialized Perfectives with the SURFACE meaning are *накрыть/na-kryt'* (*стол*) ‘set (a table)’ (from *крыть/kryt'* ‘cover’), which involves putting plates and silverware on the table’s surface; and *наклеить/na-kleit'* ‘glue onto’ (from *клеить/kleit'* ‘glue’). Specialized Perfectives with the ACCUMULATE meaning are *накупить/na-kupit'* ‘buy a lot of things’ (from *купить/kupit'* ‘buy’) and *нагрести/na-grešit'* ‘do a lot of sinning’ (from *грешить/grešit'* ‘sin’). Both the SURFACE meaning and the ACCUMULATE meaning are relevant to the simplex verbs that form Natural Perfectives with *na-*, as we see in verbs from our study below.

#### ATTRACTIONS: 31 ‘impact’ verbs, 17 ‘behav’ verbs

The prefix *na-* is strongly attracted to both ‘impact’ and ‘behav’, but the logic behind this attraction is different in each case. Most of the verbs with the ‘impact’ tag describe the application of something to a SURFACE, as in *навошить/na-voščit'* ‘wax’ and *намылить/na-mylit'* ‘soap’. A few verbs in this group are associated instead with the ACCUMULATE meaning, such as *напичкать/na-pičkat'* ‘force-feed’ and *накостылять/na-kostyljat'* ‘give a beating’. The SURFACE meaning is

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<sup>28</sup> Here we group together some meanings identified by Švedova et al. (1980: 362) and Russell (1985: 73). Our SURFACE meaning includes both “surface-oriented action” (*наудрить/na-pudrit'* ‘powder’) and “superficially” (the latter usually associated only with imperfective verbs). Our ACCUMULATE meaning includes “accumulation” (*накупить/na-kupit'* ‘buy a lot of’), “intensive” (*нагрести/na-grešit'* ‘do a lot of sinning’), “resultative” (*напугать/na-pugat'* ‘frighten’), and “training” (*научить/na-učit'* ‘teach’). The logic for combining these is that it is a lot of sinning, scaring, and teaching that lead to the results and that the more detailed classification excessively conflates the meanings of the verbs with the meanings of the prefix in Specialized Perfectives.

illustrated in example (16), and the ACCUMULATE meaning in example (17).

- (16) *Когда парикмахер **намылил/на-myil** ему лицо, клиент понял, что мастер уже начал встречать Новый Год.*<sup>29</sup>  
 ‘After the barber **had soaped** his face, the client realized that the artisan had already started celebrating the New Year.’
- (17) *Он кого-то там победил, кто-то ему **накостылял/на-kostyljal** в полутиже.*<sup>30</sup>  
 ‘One guy he won a fight with, and another one **gave him a good beating** in the heavyweight division.’

All of the verbs with the ‘behav’ semantic tag that form Natural Perfectives with *na-* describe unpleasant behaviors that are often excessive, and are thus compatible with the ACCUMULATE meaning of the prefix. Examples are *набезобразничать/na-bezobrazničat'* ‘behave disgracefully’ and *нахулиганиить/na-xuliganit'* ‘behave like a hooligan’, illustrated in (18):

- (18) *В пионеры, во всяком случае, меня со всеми вместе не приняли, я **нахулиганил/на-xuliganil** в школе.*<sup>31</sup>  
 ‘At any rate they didn’t admit me to the Young Pioneers together with the rest of the kids. I **had behaved like a hooligan** in school.’

#### NEUTRAL: 8 ‘speech’ verbs

The ‘speech’ verbs found with *na-* are connected to the ACCUMULATE meaning because they all signal a large (and often unpleasant) quantity of verbal behavior, as in *нагрубить/na-grubit'* ‘be rude’ and *наклеветать/na-klevetat'* ‘gossip’; see example (19):

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<sup>29</sup> [Коллекция анекдотов: пьяницы (1970–2000)]

<sup>30</sup> [Михаил Анчаров. Как Птица Гаруда (1989)]

<sup>31</sup> [Вячеслав Фетисов. Овертайм (1997)]

- (19) *Думаю, ты не нагрубил/на-grubil бы девушки, вел бы себя с ней вежливо.*<sup>32</sup>

'I think that you wouldn't **be rude** to a girl, you would be polite with her.'

### REPULSION: 3 'changest' verbs

Among the handful of verbs in this group, we see a connection with ACCUMULATE and SURFACE for the 'changest' verbs. For example, *наэлектризовать/na-èlektrizovat'* 'electrify' describes the ACCUMULATION of static electricity on a SURFACE, and *надыметь/na-dymit'* 'fill with smoke' describes filling a volume, and thus ACCUMULATION; see example (20):

- (20) *В квартире Любиньки собралась такая толпа и сразу так надымила/на-dymila табаком, что трудно было дышать.*<sup>33</sup>

'A crowd gathered in Ljubin'ka's apartment and immediately **filled it up with** so much **smoke** that it was hard to breathe.'

We see overlap for Natural Perfectives in both meanings of *na-*, and we also see that even the verbs with the neutral 'speech' semantic tag and the repulsed 'changest' semantic tag are compatible with the ACCUMULATE and SURFACE meanings of the prefix.

#### 3.4.4. Semantic Profile of *za-*

The meaning of *za-* is quite complex, and scholars have identified a wide range of meanings associated with this prefix.<sup>34</sup> We can sort these meanings into two groups, one that involves crossing a boundary, and another that involves fastening. Here we show examples of Specialized and Complex Act Perfectives before turning to the Natural Perfectives in our study.

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<sup>32</sup> [Моя звезда (2004) // «Твой курс» (приложение к «Аргументам и фактам»), 2004.11.10]

<sup>33</sup> [М. Е. Салтыков-Щедрин. Господа Головлевы (1875–80)]

<sup>34</sup> Our list of meanings associated with *za-* integrates the meanings suggested in Bogusławski 1963, Švedova et al. 1980, Janda 1986, Zaliznjak 2006, and Braginsky 2008.

In the boundary group we have the meanings DEFLECT, EXCESS, BEGIN, and EXCHANGE. The DEFLECT meaning involves deviating from a path, as in *зайти/za-jti* (в магазин) 'stop by (at a store)' (from *идти/idi* 'walk'), since someone is walking in a direction and then leaves that path to make a stop. The EXCESS meaning describes situations in which an action is carried on beyond normal bounds, as in *закормить/za-kormit'* 'overfeed' (from *кормить/kormit'* 'feed'). The BEGIN meaning appears in Complex Act Perfectives that describe starting an action, usually in a situation where the action is not expected. Thus a boundary is crossed from lack of action to action, as in *заговорить/za-govorit'* 'speak up, begin speaking' (from *говорить/govorit'* 'speak'). A boundary between two objects is crossed in the EXCHANGE meaning, as in *заменить/za-menit'* 'replace' (from *менять/menjat'* 'change').

The fastening group has the meanings: ATTACHMENT, COVER, FILL, and CHANGE TO A FIXED STATE, all of which are closely related. In the ATTACHMENT meaning one object becomes fastened to another, as in *зацепиться/za-cepit'sja* 'get caught on' (from *цепляться/cepljat'sja* 'clutch'). The COVER meaning is similar in that it involves fixing things to a surface, and we see it in verbs like *засыпать/za-sypat'* (песком) 'cover (by strewing) (with sand)' (from *сыпать/sypat'* 'strew'). The FILL meaning is similar but involves volumes instead of surfaces, as in *загородить/za-gorodit'* (проем) 'block (an opening)' (from *городить/gorodit'* 'enclose'). Finally, the CHANGE TO A FIXED STATE meaning involves transformation into states that are relatively inactive and permanent, as in *заспиртовать/za-spirtovat'* 'preserve in alcohol' (from *спиртовать/spirtovat'* 'fortify with alcohol').

The Natural Perfectives prefixed in *za-* in our study are associated with the meanings in the fastening group. All four of the meanings in that group are represented, though COVER and CHANGE TO A FIXED STATE are most common. And, as we see with other prefixes, the various semantic tags also differ in their meaning preferences.

#### **ATTRACTS: 47 'impact' verbs, 22 'changest verbs'**

The 'impact' verbs constitute not only the largest, but the most diverse group, which contains verbs with all four of the meanings in the fasten group. About half of the *za*-prefixed Natural Perfectives in the 'impact' class show the COVER meaning, as in *заасфальтировать/za-asfal'tirovat'*

'pave with asphalt' and *замаскировать/za-maskirovat'* 'mask'; see example (21):

- (21) *Кровь ручьями текла, говорят, площа́дь кровавую за ночь заасфальтировали/za-asfal'tirovali*, чтобы кровь тут скрыть.<sup>35</sup>  
 'Blood was running in streams, and it is said that they **paved** the bloody square **with asphalt** in one night in order to conceal the blood.'

We see the FILL meaning in verbs like *забутить/za-butit'* 'fill with rubble' and *забалластировать/za-ballastirovat'* 'load with ballast', but they are both very restricted in use; see example (22):

- (22) ...*приварили их [информационные щиты] к толстым трубам, а трубы врыли в землю и забутили/za-butili.*<sup>36</sup>  
 '...they welded them [the informational signs] to some thick pipes, dug them into the ground, and **filled** them **with rubble**.'

The ATTACH meaning is present in verbs like *закрепить/za-krepit'* 'fasten'; see example (23):

- (23) ...*закрепила/za-krepila* заколками разлетевшиеся от ветра волосы...<sup>37</sup>  
 '...her hair, which had gotten all blown about by the wind, she **put in place** with bobby pins...'

We also find the CHANGE TO A FIXED STATE meaning in verbs like *законсервировать/za-konservirovat'* 'preserve', and *захлороформировать/za-xloroformirovat'* 'chloroform'; see example (24):

- (24) ...*он захлороформировал/za-xloroformiroval* двух мышей...<sup>38</sup>  
 '...he **chloroformed** two mice...'

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<sup>35</sup> [Светлана Василенко. Ген смерти (1997–2000)]

<sup>36</sup> [Л. Невлер. Правила для исключений // «Знание – сила», 1988]

<sup>37</sup> [Юрий Нагибин. Терпение (1990–95)]

<sup>38</sup> [М. П. Бронштейн. Солнечное вещество (1936)]

The verbs in the ‘changest’ group are divided among the COVER meaning, as in *заиндеуетъ/za-indevet’* ‘become covered with frost’, and the CHANGE TO A FIXED STATE meaning, as in *затвердеть/za-tverdet’* ‘harden’. These two meanings are illustrated in examples (25) and (26):

- (25) *Эдик весь заиндеуел/za-indevel*, видно, долго болтался по морозу.<sup>39</sup>  
 ‘Edik **had gotten** all **covered with frost**. Apparently he had been out in the freezing weather for a long time.’
- (26) *Теперь следует выждать 3–4 недели для того, чтобы бетон окончательно затвердел/za-tverdel*, и произвести «пробный» залив воды.<sup>40</sup>  
 ‘Now we have to wait 3–4 weeks for the concrete **to harden** properly, and then we can do a “test” flood with water.’

#### REPULSIONS: 1 ‘behav’ verb, 1 ‘speech’ verb

Za-prefixed Natural Perfectives are found very rarely with the remaining semantic tags. This is not very surprising since the fastening meanings of *za-* do not harmonize well with ‘behav’ or ‘sound’ and ‘speech’. Verbs describing human behavior and speech are not very compatible with meanings like COVER and FILL. However, there are two verbs that show the CHANGE TO A FIXED STATE meaning even among the repulsed semantic tags. The verb *задурить/za-durit’* ‘become unreasonable’ has the ‘behav’ tag and describes behavior that becomes stubborn and difficult; see example (27). The one remaining verb is *законтрактовать/za-kontraktovat’* ‘make a contract with, place under contract’, which has the ‘speech’ tag and describes a result that is a fixed state; see example (28).

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<sup>39</sup> [Василий Аксенов. Апельсины из Марокко (1962)]

<sup>40</sup> [Водный сад (2003) // «Сад своими руками», 2003.03.15]

- (27) *Когда братский китайский народ что-то задурял/за-duril и оказался не таким уж братским, начали все это восстанавливать.*<sup>41</sup>  
 'When the fraternal Chinese people somehow **became unreasonable** and turned out not to be so fraternal after all, they started reinstating all these measures.'
- (28) *Я законтрактовал/за-kontraktoval сто двадцать театров в провинции.*<sup>42</sup>  
 'I **made a contract with** one hundred and twenty theaters in the provinces.'

The Natural Perfectives with *za-* give good evidence of overlap, since they appear in about half of the meanings of the prefix, and those meanings constitute a coherent subset of the meanings of *za-*, namely those in the fastening group. Two of the strongest repulsions of semantic tags are found with *za-*, but even here we see overlap with the CHANGE TO A FIXED STATE meaning.

### 3.4.5. Semantic Profile of *pro-*

*Pro-* also has a fairly complicated meaning, associated with both Specialized Perfectives and Complex Act Perfectives, with these meanings: THROUGH, THOROUGH, DURATION, DISTANCE, and PASS.<sup>43</sup> Perhaps the most prominent meaning is THROUGH, as in the Specialized Perfectives *проехать/pro-exat'* (сквозь тоннель) 'ride (through a tunnel)' (from *ехать/exat'* 'ride') and *проломить/pro-lomit'* (стену) 'break through (a wall)' (from *ломить/lomit'* 'break'). When something is done all the way through, it is THOROUGH, as we see in the Specialized Perfective *проварить/pro-varit'* (мясо) 'cook (the meat) thoroughly' (from *варить/varit'* 'cook'). The DURATION meaning is common among Complex Act Perfectives that describe doing something for a period of

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<sup>41</sup> [Сергей Эйгенсон. Сельхозработы (2003) // «Лебедь» (Бостон), 2003.06.16]

<sup>42</sup> [А. Н. Толстой. Черная пятница (1924)]

<sup>43</sup> This account of *pro-* merges meanings proposed by Flier (1985), Švedova et al. (1980), and Krongauz (1998).

time, as in *проплакать/pro-plakat'* (*всю ночь*) ‘cry through (the whole night)’ (from *плакать/plakat'* ‘cry’). Parallel to DURATION is DISTANCE, where we describe space instead of time, as in the Specialized Perfective *проехаться/pro-exat'* (*десять километров*) ‘ride (ten kilometers)’ (from *ехать/exat'* ‘ride’). The same verb can also illustrate the PASS meaning, as in *проехаться/pro-exat'* (*станцию*) ‘ride past (the station)’. There are also Specialized Perfectives that describe passing over things, such as *проглядеть/pro-gljadet'* ‘overlook’ (from *глядеть/gljadet'* ‘look’).

Among Natural Perfectives we find a subset of these meanings, namely THROUGH, THOROUGH, and DURATION.

#### ATTRACTION: 51 ‘sound’ and ‘speech’ verbs (23 ‘sound’ and 28 ‘speech’)

The strongest attraction in our study is between *pro-* and ‘sound’ and ‘speech’. This attraction is motivated by both the THROUGH and the DURATION meanings of *pro-*. Sounds and speech penetrate THROUGH space and in addition many of the verbs in this group can also express the DURATION meaning, indicating that the sound or speech continued for a period of time. There is also evidence of the THOROUGH meaning of *pro-* in this group.

Some of the verbs in this group refer to sounds that can be made by inanimate objects, like *прогудеть/pro-gudet'* ‘buzz’ and *прогреметь/pro-gremet'* ‘thunder’; see example (29):

- (29) *И когда эта флотилия тронулась в путь, прогремел/pro-gremel торжественный салют из пушек.<sup>44</sup>*  
 ‘And when the flotilla set off, there **thundered** a solemn canon salute.’

This group of verbs includes descriptions of various sounds specific to certain animals, like *пролаять/pro-lajat'* ‘bark’ and *промычать/pro-myčat'* ‘moo’; see example (30):

- (30) *В это время на улице пролаяла/pro-lajala собака.<sup>45</sup>*  
 ‘At that time a dog **barked** in the street.’

<sup>44</sup> [Олег Тихомиров. Подвиг Магеллана // «Мурзилка», № 1, 2002]

<sup>45</sup> [Н. О. Лосский. Учение о перевоплощении (1950–60)]

The ‘speech’ verbs are of course more specific to human beings, including verbs like *пробасить/pro-basit’* ‘talk in a deep voice’ and *пробормотать/pro-bormotat’* ‘mutter’; see example (31):

- (31) *Как ты думаешь? – пробормотала/pro-bormotala она, глядя в пол.*<sup>46</sup>  
 “What do you mean?” she **muttered**, looking at the floor.’

Finally there are a few verbs with the ‘speech’ semantic tag that specify going THROUGH an entire performance of something, as in *продиктовать/pro-diktovat’* ‘dictate’ and *проинтервьюировать/pro-intervjuirovat’* ‘interview’; see example (32):

- (32) *Кольчугин надел очки и строго продиктовал/pro-diktoval официантке заказ.*<sup>47</sup>  
 ‘Kol’čugin put on his glasses and sternly **dictated** the order to the waitress.’

The DURATION meaning is possible with many of the ‘sound’ and ‘speech’ verbs, and here we see that there is common ground between the three meanings of *pro-* found in Natural Perfectives. We see a gradual transition between the THROUGH meaning in (32) with the dictation of the order, the THOROUGH meaning in (33) with the reciting of a whole body of works, and the DURATION meaning in (34), where we have yelling throughout the whole night. It is not really possible here to find any boundaries between these meanings, which are more like a continuum.

- (33) *…первым поэтом он считает Сергея Клычкова, и грозился продекламировать/pro-deklamirovat’ всего его наизусть.*<sup>48</sup>  
 ‘…he considers Sergej Klyčkov to be the best poet and he threatened **to recite** all of his works from memory.’

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<sup>46</sup> [Ирина Муравьева. Мещанин во дворянстве (1994)]

<sup>47</sup> [Василий Аксенов. Пора, мой друг, пора (1963)]

<sup>48</sup> [Дон Аминадо. Поезд на третьем пути (1954)]

- (34) ...*прокричам/pro-kričat* всю ночь – до утренней яичницы...<sup>49</sup>

'...they will yell all night, until the omelettes are served in the morning...'

#### NEUTRAL: 10 'impact' verbs

Among the *pro*-prefixed verbs with the 'impact' tag we find verbs that describe saturation with substances and the drilling of holes. Thus both THOROUGH and THROUGH are relevant meanings of *pro*- for these verbs. Substances penetrate objects and places with verbs like *продезинфицировать/pro-dezinficirovat'* 'disinfect' and *провентилировать/pro-ventilirovat'* 'ventilate'; see example (35):

- (35) *Промыли рану на спине, продезинфицировали/pro-dezinficirovali, наложили бинты.*<sup>50</sup>

'They washed the wound on his back, **disinfected** it, and put on a bandage.'

Making holes can involve both drilling, as in *пробурить/pro-burit'* 'bore, drill' and other actions that force one object THROUGH another, as in *протаранить/pro-taranit'* 'ram'; see examples (36) and (37):

- (36) ...он обложил кирпичом родительский дом, крышу перекрыл; потом *пробурил/pro-buril* артезианскую скважину...<sup>51</sup>

'...he covered the family home in bricks and put on a new roof; then he **bored** an artesian well...'

- (37) Как раз в то время, когда первый из захваченных «боингов» *протаранил/pro-taranil* северную башню ВТЦ в Нью-Йорке...<sup>52</sup>

'Right at that time, when the first of the hijacked Boeings **rammed** the north tower of the WTC in New York...'

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<sup>49</sup> [Елизавета Скобцова (Кузьмина-Караваева). Встречи с Блоком (1936)]

<sup>50</sup> [Андрей Грачев. Ярый-3. Ордер на смерть (2000)]

<sup>51</sup> [Борис Екимов. На хуторе // «Новый Мир», 2002]

<sup>52</sup> [Михаил Карпов. Перл-Харбург (2003) // «Совершенно секретно», 2003.08.09]

### REPULSIONS: 4 'changest' verbs, 0 'behav' verbs

Only four Natural Perfectives are found with the prefix *pro-* and the semantic tag 'changest'. Two of these verbs express saturation and are thus connected to the THOROUGH meaning of *pro-*: *пропитаться/pro-pitatsja* 'become saturated' and *прогоркнуть/pro-gorknut'* 'become bitter'; see example (38):

- (38) *Воздух постепенно пропитался/pro-pitalsja гарью и приобрел сизый оттенок.*<sup>53</sup>

'The air gradually **became saturated** with fumes and took on a gray hue.'

The other two verbs in this group describe the opening up of holes that one can see THROUGH: *прояснеть/pro-jasnet'* 'clear up' (describing weather, when it becomes possible to see through the clouds) and *проходиться/pro-xudit'sja* 'become worn out and full of holes'; see example (39):

- (39) *У меня проходились/pro-xudilis' ботинки, подошва на одном месте отстала.*<sup>54</sup>

'My shoes **have gotten all worn out and full of holes**, the sole on one of them has come off.'

The semantic profile of *pro-* for Natural Perfectives consists of sound and speech that penetrate space, substances that thoroughly saturate an object or space, and penetration that results in holes. Thus the meanings THROUGH and THOROUGH are represented among Natural Perfectives. The 'sound' and 'speech' verbs often can describe DURATION as well. There are no verbs with the 'behav' tag here, which is logical since behavior does not usually require penetration. The DISTANCE and PASS meanings of *pro-* are missing among the Natural Perfectives, which is perhaps not too surprising since traveling a cer-

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<sup>53</sup> [Евгений Прошкин. Механика вечности (2001)]

<sup>54</sup> [Виктор Астафьев. Рассказы (2000) // «Новый Мир», 2001]

tain distance and passing by something are not the kinds of meanings that are compatible with Natural Perfectives.<sup>55</sup>

### 3.5 Summary of Semantic Profiling Analysis of Big Prefixes

The semantic profiling analysis is based on an independent, objective classification of verbs according to their meanings, as documented by the assignment of semantic tags in the Russian National Corpus. Differences in the distribution of prefixes across semantic tags is statistically significant and shows a large effect size. It is possible to measure the attractions and repulsions in this distribution, and we use these measures to organize our presentation of the verbs in the distribution.

Table 4 on page 112 summarizes the findings of the semantic profiling analysis. The first row gives a general description of what kinds of verbs use each prefix to form Natural Perfectives. The second row lists the meanings of each prefix that are relevant to the formation of Natural Perfectives, while the bottom row lists the prefix meanings that are not found among Natural Perfectives.

The semantic profiling analysis gives strong evidence for the Overlap Hypothesis. Not only does each prefix have a unique profile in terms of the semantic tags it is associated with, but we see strong patterns that reveal how the meanings of simplex verbs are matched to the meanings of prefixes. Overlap between the meanings of a prefix and the meanings of simplex verbs can be either complete, in the case of *s-* and *na-*, or partial, in the case of *po-*, *za-*, and *pro-*. The prefixal meanings that are not found among Natural Perfectives are those that refer to only a part of an action (START and BEGIN), have some kind of specific quantification (DISTRIBUTE, EXCESS, and DISTANCE), or are otherwise incompatible for the task of creating perfective partner verbs (DEFLECT, EXCHANGE, and PASS). These findings are thus parallel to those achieved for the other prefixes by the radial category profiling analysis in chapter 2.

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<sup>55</sup> Note that quantificational meanings (like DISTANCE) and meanings that involved a comparison with another action (like PASS) are consistently found lacking among Natural Perfectives in chapter 2 as well.

**Table 4.** Semantic Profiles of Prefixes in Terms of the Meanings Relevant to Natural Perfectives

	<i>po-</i>	<i>s-</i>	<i>na-</i>	<i>za-</i>	<i>pro-</i>
kinds of verbs found in Natural Perfectives	change of state along a scale, spoken and physical tasks	behavior and speech done once, putting things together, making things more compact	applying something to a surface, doing a lot of something, unpleasant excessive actions and speech	covering, filling, attaching, change to become harder and less active	speaking, making sounds, saturation, making holes
prefix meanings found in Natural Perfectives	RESULT, SOME	TOGETHER, DOWN, ONCE	SURFACE, ACCUMULATE	ATTACHMENT, COVER, FILL, CHANGE TO A FIXED STATE	THROUGH, THOROUGH, DURATION
prefix meanings NOT found in Natural Perfectives	DISTRIBUTE, START			DEFLECT, EXCESS, BEGIN, EXCHANGE	DISTANCE, PASS

The meanings of the Natural Perfectives are quite consistent, even among the groups of verbs that have semantic tags that are repulsed from a given prefix. For example, verbs prefixed with *pro-* have meanings that are compatible with THROUGH, THOROUGH, and DURATION, regardless of whether they have semantic tags that are attracted or repulsed from *pro-*. Each prefix seeks out the verbs that match its meaning best. This is visible in the overall distribution, where certain semantic tags are attracted to certain prefixes, but this effect does not disappear in the case of repulsed semantic tags either.

Collectively, the studies in chapter 2 and the present chapter show that the meanings of the prefixes and the meanings of the Natural Perfectives overlap, and this has important implications for second language pedagogy. Currently textbooks of Russian present verb “pairs” in a haphazard fashion with little meaningful guidance, requiring learners to simply memorize the nearly two thousand combinations of simplex verbs and prefixes that produce Natural Perfectives. Given our findings, we envision a new kind of textbook that would consistently present verbs and prefixes according to their meanings. Prefixes would be presented as coherent networks of meanings, and for each meaning, learners would be exposed to the relevant Specialized Perfectives (and Complex Act and Single Act Perfectives where they exist), alongside the corresponding groups of Natural Perfectives. Learning of prefix + verb combinations, which has until now been frustrating and chaotic, would thus become a harmonious, logical exercise.

However, we are not yet done presenting evidence against the Empty Prefix Hypothesis. Chapter 4 builds on the results in the current chapter by focusing on three of the “big” prefixes in our analysis: *po-*, *na-*, and *za-*. We look at a single simplex verb that can form Natural Perfectives with all three of these prefixes and try to discover whether there are any differences in their use and, if so, whether those differences are connected to the meanings of the prefixes.



## CHAPTER 4

## Prefixes and Syntax: Constructional Profiling

The Russian verb *гружить/gruzit'* ‘load’ is special for three reasons. First, this verb appears in two theoretically interesting syntactic constructions. Second, it has three Natural Perfectives. Finally, all three Natural Perfectives can also appear in both constructions.

The two constructions that *гружить/gruzit'* ‘load’ can appear in are called the “theme-object” construction and the “goal-object” construction.<sup>1</sup> The names of the constructions come from the direct object that is marked with the accusative case. Let’s say that we have some boxes that we want to transport and a cart that we can use for this purpose. The boxes are the theme (the item that is put somewhere) and the cart is the goal (the place where the item is put). In the theme-object construction the theme is the direct object, as in *гружить/gruzit' ящики на телегу* ‘load the boxes onto the cart’. The goal appears in a prepositional phrase in the theme-object construction, usually with the preposition *на* ‘onto’ or *в* ‘into’. In the goal-object construction the goal is the direct object, as in *гружить/gruzit' телегу ящиками* ‘load the cart with boxes’. The theme in the goal-object construction often appears in the instrumental case as in our example: *ящиками* ‘with boxes’.

*Гружить/gruzit'* ‘load’ uses not just one, but three prefixes to form Natural Perfectives: *na-*, *za-*, and *po-*. Collectively we call these four verbs (the simplex and the three Natural Perfectives) “the ‘load’ verbs.” All three Natural Perfectives can appear in both the theme-object and the goal-object constructions.

But does the choice of prefix make a difference in the distribution of the theme-object and goal-object constructions? This question moti-

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<sup>1</sup> The terms “theme-object” and “goal-object” are suggested by Brinkmann (1997) and Nichols (2008). Other scholars have used a variety of other terms to refer to these constructions (mainly based on English data), among them: Boas (2003, 2006), Bowerman (1982), Goldberg (1995, 2006), Iwata (2005, 2008), Mateu (2000), Olbishevska (2004), Pinker (1989), and Rappaport and Levin (1988).

vates the corollaries of the Empty Prefix and Overlap Hypotheses that we test in this chapter.<sup>2</sup>

#### 4.1. Corollaries to Be Tested

**Corollary 3 of the Empty Prefix Hypothesis:** Because prefixes have no meaning in Natural Perfectives, there should be no significant difference between the distribution of the theme-object and goal-object constructions associated with *грузить/gruzit'* ‘load’ and its Natural Perfectives *нагрузить/na-gruzit'*, *загрузить/za-gruzit'*, and *погрузить/po-gruzit'*.

**Corollary 3 of the Overlap Hypothesis:** Because prefixes retain their meaning in Natural Perfectives, each prefix will show a different distribution of the theme-object and goal-object constructions, and this difference will be related to the difference in the meanings of the prefixes.

Though the simplex verb *грузить/gruzit'* ‘load’ appears in both constructions, the distribution is not even: 73% of examples have the theme-object construction, while 27% have the goal-object construction.<sup>3</sup> We can call this distribution the “constructional profile” of *грузить/gruzit'* ‘load’. If the prefixes that form Natural Perfectives all have the same zero value, there is no reason for the constructional profile to change when the prefixes are attached, and furthermore there is no reason for each prefix to have a unique constructional profile.

We test the corollaries by examining the constructional profiles of *грузить/gruzit'* ‘load’ and its Natural Perfectives. We identify two additional relevant factors (active vs. passive use and full vs. reduced constructions) and design a statistical model that accounts for the distribution of the theme-object and goal-object constructions. This model shows us that the prefixes have an effect on constructional profiles. The results of this study also show that the constructional profiles reflect the meanings of the prefixes. In addition we discuss the use of

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<sup>2</sup> More detailed presentations of this study are available in Sokolova, Lyashevskaya, and Janda 2012 and Sokolova 2012.

<sup>3</sup> These percentages come from the study described below in this chapter and report only data from active constructions. See section 4.2.

metaphor and prepositions, both of which also reflect differences among the three prefixes.

Because *нагрузить/na-gruzit'*, *загрузить/za-gruzit'*, and *погрузить/po-gruzit'* all mean 'load', they are close synonyms, and we want to find out whether there are actually any differences between them. Constructional profiling is a useful method for distinguishing among words with very similar meanings. A study of Russian synonyms for 'sadness' (*грусть, печаль, тоска, меланхолия, уныние, хандра*) and 'happiness' (*ликование, наслаждение, радость, удовольствие, восторг*) showed that these words could be distinguished on the basis of the grammatical constructions in which they appear (Janda and Solovyev 2009). The *грусть* type of 'sadness', for example, has a pronounced preference for the construction with the preposition *c* 'with' and the instrumental case (*с грустью* 'with sadness'), whereas the *хандра* type of 'sadness' prefers the preposition *om* 'from, due to' (*от хандры* 'from sadness'). These differences in preferences for constructions are associated with differences in meanings. The point of our study of the 'load' verbs is to use constructional profiling to discover differences in the distribution of constructions that indicate differences between the meanings of the verbs. Since the three Natural Perfectives of *гружить/gruzit'* 'load' differ formally only in terms of the prefixes they have, the differences in meanings revealed by constructional profiling will indicate differences in meaning attributable to the prefixes.<sup>4</sup>

## 4.2. Active and Passive Uses

Our goal is to evaluate the role of the prefixes in determining the distribution of the theme-object vs. goal-object constructions. Before we undertake a statistical analysis, we need to consider whether there are other factors in addition to the prefixes that might affect the distribution. When all factors are taken into account, our statistical model will tell us what factors are responsible for the differences and to what extent. In other words, we will find out whether it is the prefixes or some other factors, or a combination of both that decides the constructional

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<sup>4</sup> Constructional profiling, like radial category profiling (chapter 2) and semantic profiling (chapter 3), is a specific type of behavioral profiling (Divjak and Gries 2006; Gries and Divjak 2009). In the present study the distributions in grammatical constructions are the relevant parameter.

profiles. We show in this section that there is reason to suspect that the use of active vs. passive forms of the verb is a factor. For a verb like *гружить/gruzit'* 'load' and its Natural Perfectives, active forms include all the conjugated forms of the verb plus the infinitive, while the passive forms are the past passive participles: *гружен(ный)/gružen(nyj)*, *нагружен(ный)/na-gružen(nyj)*, *загружен(ный)/za-gružen(nyj)*, and *погружен(ный)/po-gružen(nyj)*, all meaning 'loaded'.<sup>5</sup>

Our study is based on data from the Modern subcorpus (1950–2009, containing 98 million words) of the Russian National Corpus.<sup>6</sup> 1,920 examples of the 'load' verbs are found in our sample, and of these 895 are active forms while 1,025 are passive participles. Let's take the active forms first. The distribution of active forms is shown in Table 1 on page 119. The data in Table 1 is visualized in terms of percentages in Figure 1; the two bars representing the two constructions add to 100% for each verb.

Each of the 'load' verbs has a unique constructional profile: *згрузить/gruzit'* prefers the theme-object construction, as shown in (1), but is also found with the goal-object construction, as in (2). *Нагрузить/na-gružit'* shows the opposite tendency, since the theme-object construction, shown in (3), is less frequent than the goal-object construction, as in (4). For *загрузить/za-gruzit'* the distribution is nearly balanced between the theme-object construction and the goal-object construction, shown in (5) and (6), respectively.<sup>7</sup> *Погрузить/po-gruzit'* is found almost exclusively in the theme-object construction, as shown in (7).

- (1) *Грузи/gruzi* все в машину и вези сюда.<sup>8</sup>

'Load everything into the car and bring it here.'

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<sup>5</sup> This study did not involve passives with the reflexive *-ся/cb*.

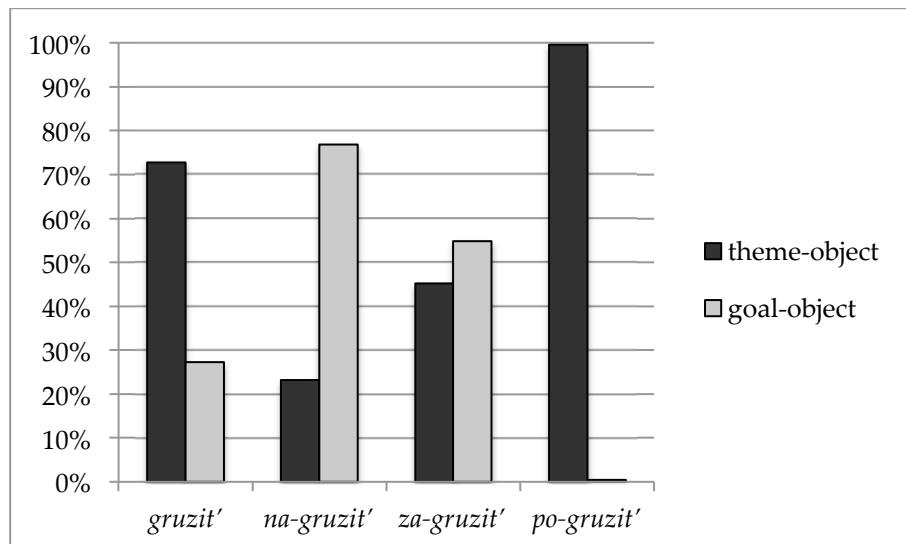
<sup>6</sup> In order to prevent the preference of any author from influencing our data, only one example was collected from any given document.

<sup>7</sup> A chi-square test shows that the difference between use of theme-object and goal-object constructions for the *за*-prefixed verb is not significantly different from a 50%–50% distribution.

<sup>8</sup> [Лев Дворецкий. Шакалы (2000)]

**Table 1.** Numbers of Examples of Active Forms for the Two Constructions

	Theme-Object Constructions	Goal-Object Constructions	Total
<i>згрузить/gruzit'</i>	208	78	286
<i>нагрузить/na-gruzit'</i>	34	113	147
<i>загрузить/za-gruzit'</i>	94	114	208
<i>погрузить/po-gruzit'</i>	253	1	254



**Figure 1.** Examples of Active Forms as Percentages for Each Verb

- (2) В сорок пятом или в сорок шестом году в Мариупольском порту *згрузили/gruzili* судно пищеницей.<sup>9</sup>

'In 1945 or 1946 in the Mariupol' harbor they **loaded** a ship with wheat.'

<sup>9</sup> [Павел Сиркес. Труба исхода (1990–99)]

- (3) *Богопослушный Авраам взял нож, **нагрузил/на-gruzil** дрова на ослика и повел с собой сына Исаака к месту жертвоприношения.<sup>10</sup>*  
 'The god-fearing Abraham took a knife, **loaded** wood onto a donkey, and led his son with him to the place of sacrifice.'
- (4) *...**нагрузила/на-gruzila** сумку арбатским породистым товаром — чай индийский, пирожные, печенье.<sup>11</sup>*  
 '...she **loaded** her purse with fine goods from the Arbat — Indian tea, pies, and cookies.'
- (5) *Но когда реквизит **загрузили/за-gruzili** в товарные вагоны и состав должен был вот-вот тронуться...<sup>12</sup>*  
 'But when they **had loaded** the props into the freight cars and the train was just about to leave...'
- (6) *Пароход **загрузили/за-gruzili** провизией, живым скотом и птицей, самыми крепкими в мире велосипедами «ЗИФ» и лучшими в мире галошами фабрики «Красный треугольник».<sup>13</sup>*  
 'They **loaded** the steamship with provisions, with livestock and fowl, with the best bicycles in the world made by "ZIF," and the best galoshes in the world from the "Red Triangle" factory.'
- (7) *Деньги **погрузили/по-gruzili** в три грузовика...<sup>14</sup>*  
 'They **loaded** the money into three trucks...'

Although this distribution is statistically significant with a large effect size,<sup>15</sup> this represents less than half of the data and it appears that

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<sup>10</sup> [Фазиль Искандер. Поэт // «Новый Мир», 1998]

<sup>11</sup> [Людмила Улицкая. Путешествие в седьмую сторону света // Новый Мир, № 8–9, 2000]

<sup>12</sup> [И. Э. Кио. Иллюзии без иллюзий (1995–99)]

<sup>13</sup> [Юрий Буйда. Отдых на пути в Индию (1998)]

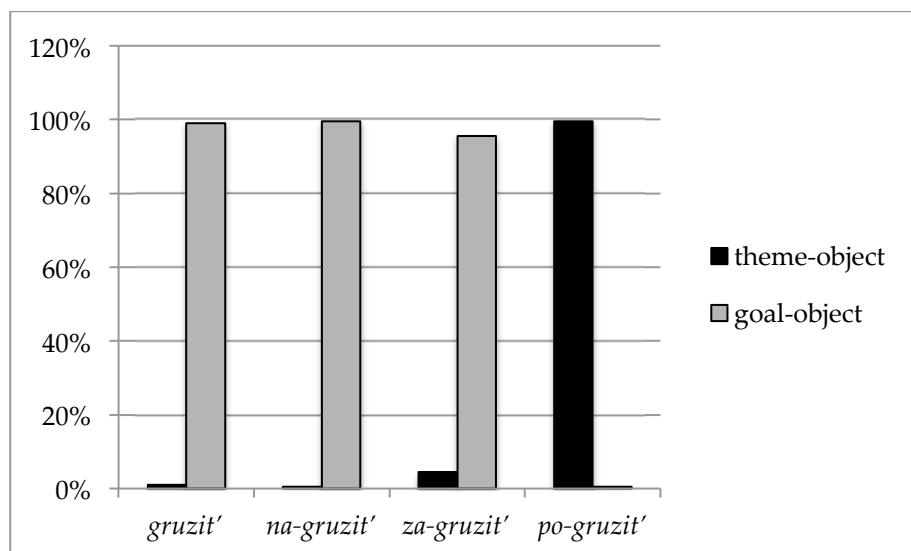
<sup>14</sup> [Владимир Абаринов. Меньше половины колоды (2003) // «Совершенно секретно», 2003.02.06]

there are other factors that have to be taken into account, so a simple chi-square test is not enough. Let us look at the remainder of the data, namely the passive forms of the 'load' verbs.

Table 2 presents the frequencies of the passive forms, visualized in terms of percentages in Figure 2.

**Table 2.** Numbers of Examples of Passive Forms for the Two Constructions

	Theme-Object Constructions	Goal-Object Constructions	Total
<i>зружен/gružen</i>	1	106	107
<i>нагружен/na-gružen</i>	1	220	221
<i>загружен/za-gružen</i>	11	237	248
<i>погружен/po-gružen</i>	447	2	449



**Figure 2.** Examples of Passive Forms as Percentages for Each Verb

<sup>15</sup> For the active forms, a chi-square analysis of the distribution yields the following results: chi-square = 293.3285, degrees of freedom = 3, p-value < 2.2e-16, effect size (Cramer's V) = 0.6.

The use of passive forms clearly has an influence on the choice of the construction. For passive forms, one construction is preferred in over 95% of examples for every verb. The preference of the simplex verb *згрузить/gruzit'* is the reverse of what it is for active forms: for passive forms the goal-object construction, shown in (8), is strongly preferred and the theme-object construction is nearly excluded. Both *нагрузить/na-gruzit'* and *загрузить/za-gruzit'* have a preference for the goal-object construction among active forms, and this preference is enhanced to the point that the goal-object construction is nearly exclusive, shown in (9–10). The constructional profile of *погрузить/ro-gruzit'* remains unchanged, with a strong preference for the theme-object construction, as seen in (11).

- (8) *Навстречу двигались тяжело груженные/gružennye машины.<sup>16</sup>*  
 ‘Heavily **loaded** vehicles were coming in the opposite direction.’
- (9) *Ирина Владимировна шла нагружённая/na-gružennaja сумками и сумочками.<sup>17</sup>*  
 ‘Irina Vladimirovna walked along, **loaded** with bags and pouches.’
- (10) *...первый танкер был загружен/za-gružen в присутствии президентов Путина и Назарбаева.<sup>18</sup>*  
 ‘...the first tanker was **loaded** in the presence of presidents Putin and Nazarbaev.’
- (11) *К двум часам все вещи были вынесены на улицу и погружены/ro-gruženy в автомобиль.<sup>19</sup>*  
 ‘By two o’clock all the things were carried out onto the street and **loaded** into the car.’

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<sup>16</sup> [В. Щербань. Свалка // «Работница», 1989]

<sup>17</sup> [Вадим Крейд. Георгий Иванов в Йере // «Звезда», № 6, 2003]

<sup>18</sup> [Андрей Дернитин. Нефть пошла по трубам. Как эффективно осуществлять прибыльные проекты без «пиара» (2001) // «Известия», 2001.10.09]

<sup>19</sup> [Происшествия (2003) // «Встреча» (Дубна), 2003.06.04]

Notice that the items that are direct objects when used in active forms appear instead as grammatical subjects in the presence of passive participles. The first three examples above are of the goal-object construction, but the goals are the subjects: the vehicles in (8), Irina Vladimirovna in (9), and the tanker in (10). In example (11) it is the theme, the “things,” that appears as the subject. Another important point is that sometimes one of the items in a construction can be missing, as we see in both (8) and (10), where the theme is not mentioned: the vehicles in (8) are loaded, but we are not told with what, and the same goes for the tanker in (10). In section 4.3 we examine this phenomenon, which we call reduced constructions, in more detail.

### 4.3. Full and Reduced Constructions<sup>20</sup>

Examples (1–7) above illustrate full constructions because in all these examples both the theme and the goal are named. In (1) we see the full variant of the theme-object construction where the theme is *все* ‘everything’ and the goal is *в машину* ‘into the car’. Example (12) also contains the theme-object construction, but only the theme is named: *лес и камень* ‘timber and rock’. The goal (presumably railroad cars) is not mentioned, so we call this a reduced construction.

- (12) *Мужики подрабатывали на станции, грузили/gruzili лес и камень.*<sup>21</sup>

‘The men earned extra money at the station, they **loaded** timber and rock.’

We also find reduced versions of the goal-object construction. In the full construction in (2) the goal is *судно* ‘ship’ and the theme is *пшеницей* ‘with wheat’. Example (13) is a reduced version of the goal-object construction where the goal, *трейлеры* ‘trailers’, is named but the theme is missing.

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<sup>20</sup> Fillmore (1986, 2008; Fillmore, Johnson, and Petrucc 2003) uses the term “null instantiation” to describe reduced constructions.

<sup>21</sup> [В. С. Балина. Три сестры // «Звезда», 2001]

- (13) *Рабочие сцены переставляли декорации и одновременно грузили/gruzili трейлеры.<sup>22</sup>*  
 ‘The stage workers rearranged the sets and **loaded** the trailers at the same time.’

Reduced versions of the constructions where the theme-object construction names only the theme and the goal-object construction names only the goal are fairly common and found with all of the prefixes. In all, there are 1,353 examples of full constructions in our database and 567 examples of reduced constructions. Tables 3 and 4 on page 125 compare data for full and reduced constructions and these are visualized as percentages in Figures 3 and 4.

Examples (14), (16), and (18) illustrate the reduced theme-object construction with the prefixes *na-*, *za-*, and *po-*. Only the themes, *листья* ‘leaves’, *уголь* ‘coal’, and *раненых* ‘the wounded’, are named in these examples. Examples (15) and (17) illustrate the reduced goal-object construction with the prefixes *na-* and *za-* (*po-* is rare in the goal-object construction). These examples name only the goals: *тележку* ‘cart’ and *автомобиль* ‘automobile’.

- (14) *Раз в день приехал, листья нагрузил/na-gruzil – и на свалку.<sup>23</sup>*  
 ‘He came once a day, **loaded up** leaves, and drove to the dump.’
- (15) *Когда мы хорошо нагрузили/na-gruzili тележку, я предложила купить «что-нибудь сладенькое» для Андрея...<sup>24</sup>*  
 ‘When we **had gotten** the cart **loaded up**, I suggested buying “something sweet” for Andrej...’

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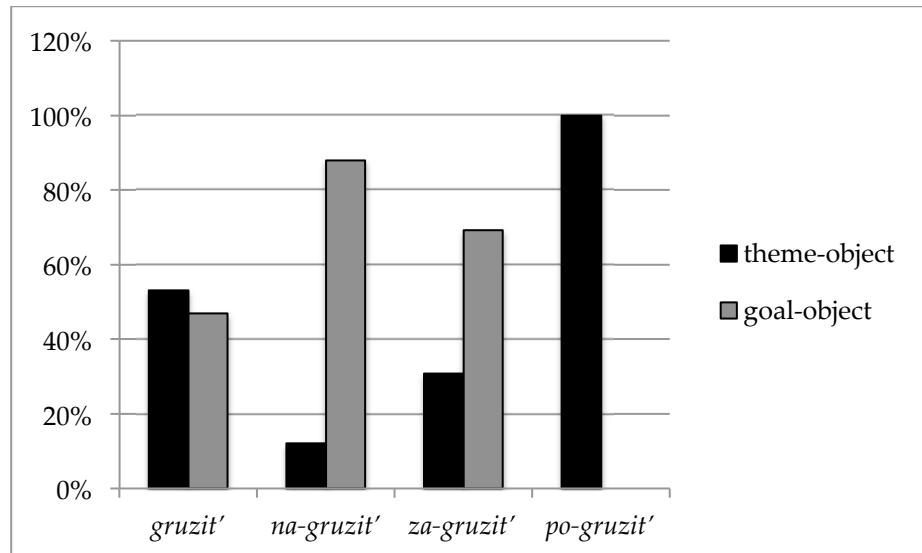
<sup>22</sup> [Анатолий Эфрос. Профессия: режиссер (1975–87)]

<sup>23</sup> [Сергей Каледин. Записки гробокопателя (1987–99)]

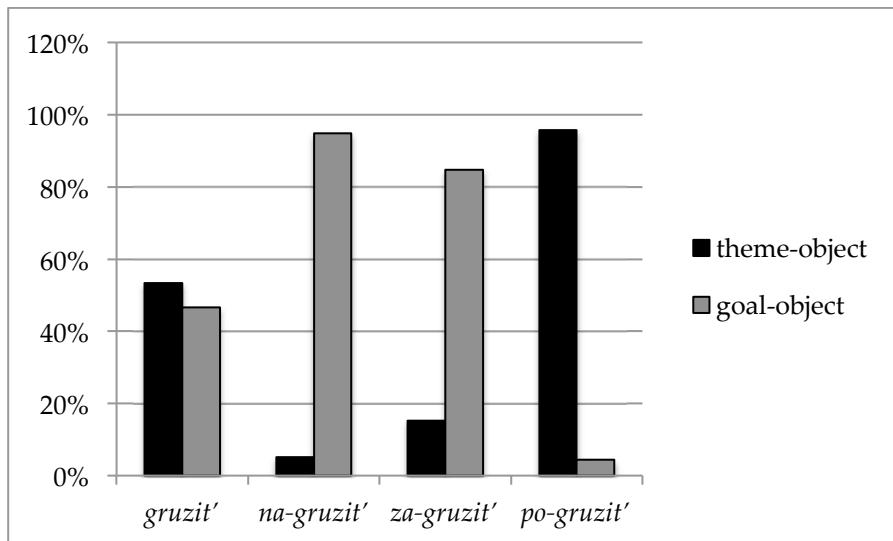
<sup>24</sup> [Нина Воронель. Без прикрас. Воспоминания (1975–2003)]

**Table 3.** Numbers of Examples of Full Constructions

	Theme-Object Constructions	Goal-Object Constructions	Total
<i>грузитъ/gruzit'</i>	138	122	260
<i>нагрузитъ/na-gruzit'</i>	28	204	232
<i>загрузитъ/za-gruzit'</i>	70	157	227
<i>погрузитъ/po-gruzit'</i>	634	0	634

**Figure 3.** Examples of Full Constructions as Percentages for Each Verb**Table 4.** Numbers of examples of reduced constructions

	Theme-Object Constructions	Goal-Object Constructions	Total
<i>грузитъ/gruzit'</i>	71	62	133
<i>нагрузитъ/na-gruzit'</i>	7	129	136
<i>загрузитъ/za-gruzit'</i>	35	194	229
<i>погрузитъ/po-gruzit'</i>	66	3	69



**Figure 4.** Examples of Reduced Constructions as Percentages for Each Verb

- (16) Только *загрузить/за-gruzit'* уголь будет проблематично, поскольку из-за мороза он превратился в глыбы.<sup>25</sup>  
 'Just **getting** the coal **loaded** will be problematic since it has turned into clumps due to the frost.'
- (17) Мы *загрузили/за-gruzili* автомобиль и приготовились к отъезду.<sup>26</sup>  
 'We **loaded up** the automobile and prepared for departure.'

<sup>25</sup> [Тимур Хикматов. Паровозы просят кораблей. Простои вагонов в отечественных портах вынуждают грузоотправителей уходить в Прибалтику (2003) // «Известия», 2003.01.15]

<sup>26</sup> [Родион Нахапетов. Влюблённый (1998)]

- (18) Женщины и дети уже прошли, уже погрузили/по-грузили раненых и уехали фургоны...<sup>27</sup>

'The women and children had passed already, they **had** already **loaded up** the wounded and the vans had departed...'

Though the difference in distribution between Figures 3 and 4 is not dramatic, it seems to be the case that the use of the goal-object construction is boosted for *нагрузить/на-грузит'* and *загрузить/за-грузит'* when the construction is reduced. To be on the safe side, we should take this into consideration when analyzing our data.

#### 4.4. Logistic Regression Model

We want to discover whether the prefixes in the Natural Perfectives influence the choice of the grammatical construction. In other words, does the use of the theme-object construction vs. the goal-object construction depend on the presence and choice of prefix? This problem is complicated by the fact that there are two other factors that may be relevant: the use of active vs. passive forms and the use of full vs. reduced constructions. In order to answer our question and address our hypotheses we need a way to gauge the contributions of the various factors. We do this by using a logistic regression model.

Our problem is similar to the problem faced by a researcher who wants to know whether smoking causes lung cancer. In order to ask this question in a responsible way, the researcher needs to take into account many other possible factors such as exercise, diet, and family history. Let's imagine that our cancer researcher undertakes a survey and collects data on thousands of people. Our researcher's database contains this kind of information for each person:

- Did the person get lung cancer: yes/no
- Did the person smoke: chain smoker/occasionally/no
- Did the person exercise at least twice a week: yes/no
- What kind of diet did the person have: high fat/high carbohydrate/other

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<sup>27</sup> [Борис Васильев. Были и небыли. Книга 2 (1988)]

- Did a blood relative also have lung cancer: yes/no
- Etc.

The first question, about getting lung cancer, is what we call a dependent variable because we suspect that it depends on the other variables, which are called independent variables. We want to know whether the independent variable of smoking is associated with the dependent variable of getting lung cancer. But there are other independent variables that may be important, so they need to go into the equation too. Because the dependent variable has two values, yes vs. no, we need to use the logistic regression model. This model can evaluate the probability that a range of independent variables have a significant relationship to the dependent variable. Because it is based on the logistic function, which converts all values to values between zero and 1, logistic regression can handle outcomes with only two values.

In addition to looking at the individual contribution of each variable, which is called a “main effect,” the logistic regression model can discover whether two or more independent variables have a combined effect, which is called an “interaction.” It might be the case that neither regular exercise nor having a healthy diet individually influence a person’s chance of getting lung cancer. However, if one both exercises regularly and eats a healthy diet, then the chance of getting lung cancer is reduced. In this case the exercise and diet variables interact. It is also possible for a factor both to serve as a main effect and to be involved in an interaction. When our cancer researcher runs a logistic regression analysis, some or all of the independent variables might show a main effect, and in addition there could be an interaction, say between exercise and diet.

Our problem is entirely parallel to that of the cancer researcher. We have data on 1,920 examples of the use of the ‘load’ verbs. For each example, we know whether the verb uses the theme-object construction or the goal-object construction, and this is our dependent variable (equivalent to getting lung cancer). For each example, we also know the shape of the verb, which is either unprefixed or prefixed with *na-*, *za-* or *po-*; this is the independent variable that we are particularly interested in (equivalent to smoking). In addition, we know whether the example uses active or passive forms of the verb and whether the example is of a full or reduced version of the construction. These are ad-

ditional independent variables that we must take into account (equivalent to diet, exercise, and family history).

Our database and the commands needed to run the logistic regression are available on our website ([http://emptyprefixes.uit.no/constructional\\_eng.htm](http://emptyprefixes.uit.no/constructional_eng.htm)), along with a full inventory of the results of the analysis.<sup>28</sup> The logistic regression analysis shows that all of the independent variables, namely the shape of the verb/choice of prefix, the use of passive participles, and the use of reduced vs. full constructions, serve as main effects. In addition there is an interaction between the shape of the verb/choice of prefix and the use of active vs. passive forms. According to the model, there are the following highly significant relationships, listed in order of relative strength, starting with the strongest one (visualized in Figures 1, 2, and 3):

- *Нагрузить/na-gruzit'* and *загрузить/za-gruzit'* prefer the goal-object construction.
- The unprefixed verb *гружить/gruzit'* and its Natural Perfective *ногружить/po-gruzit'* favor the theme-object construction.
- The use of passive participles contributes to the choice of the construction, and this varies according to the choice of prefix.
- Full constructions are more often found with the theme-object construction, while goal-object constructions are more likely to be reduced.

The model has high correlation strength and correctly predicts the construction for 88.5% of examples.<sup>29</sup>

To summarize, the analysis supports the corollary of the Overlap Hypothesis: the choice of prefix is related to the choice of the construction. The three Natural Perfectives behave differently. This is confirmed even though there are other factors that show significant relationships.

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<sup>28</sup> This analysis is modeled after Baayen 2008 and Gries 2009 and carried out using the R software package.

<sup>29</sup> The correlational strength ( $R^2$ ) of the model is 0.796, the coefficient of concordance is 0.964, and the rank correlation between predicted and observed responses is 0.928. These are all high numbers that show that the model performs well. A perfect score in all cases would be 1. The overall p-value (probability that one could observe this distribution or one even more extreme if there is in reality no relationship) is 0.

What do these results have to do with the meanings of the prefixes? The three prefixes we find with the ‘load’ verbs, *na-*, *za-*, and *po-*, are all among the “big” prefixes that we examined in chapter 3. Here are the meanings of these prefixes that were found relevant for Natural Perfectives in that chapter:

*na-*: SURFACE, ACCUMULATE

*za-*: ATTACHMENT, COVER, FILL, CHANGE TO A FIXED STATE

*po-*: RESULT, SOME

We can consider how these meanings relate to the preferences of the prefixes for the theme-object vs. goal-object construction.

We saw in chapter 3 that there are many ‘impact’ verbs that have a Natural Perfective in *na-* and describe the application of something to a SURFACE, such as *намылить/na-myilit'* ‘soap’. The application of soap to skin is parallel to the application of a load to the SURFACE of a vehicle or animal that can transport it. This motivates the preference of *нагрузить/na-gruzit'* for the goal-object construction, where the goal represents a SURFACE. The ACCUMULATE meaning is compatible with the theme-object construction, which describes how the theme is loaded, causing accumulation of the theme. This explains why the theme-object construction is also well attested for *нагрузить/na-gruzit'*.

The CHANGE TO A FIXED STATE meaning of *za-* is compatible with both the theme-object and the goal-object constructions since when items have been placed in a vehicle they are fixed in a spot and also a vehicle that has been loaded up is in a new, often less mobile, state. The ATTACHMENT meaning is most compatible with the theme-object construction; here the theme is parallel to the object of *закрепить/za-krepit'* ‘fasten’. The COVER and FILL meanings are most compatible with the goal-object construction, parallel to the use of Natural Perfectives like *забалластировать/za-ballastirovat'* ‘fill with ballast’. These meanings of *za-* motivate the use of *загрузить/za-gruzit'* with both the theme-object and the goal-object constructions.

While the RESULT meaning of *po-* does not give us much to go on, the SOME meaning relates specifically to the theme, since one can load SOME of the theme. This motivates the predominance of the theme-object construction with *нагрузить/po-gruzit'*.

The results of the study of the constructional profiles of the ‘load’ verbs concord well with what we have learned from the semantic profiles of the prefixes. There are two additional factors that lend further support to the connection between the constructional profiles and the meanings of the prefixes, namely metaphorical uses of the constructions and the choice of preposition. We examine these two issues in turn in the next two sections.

#### 4.5. Metaphorical Uses

In addition to describing the placement of physical objects in or on vehicles for transportation, the ‘load’ verbs are used to express the way in which humans and devices are burdened with less tangible loads such as information, problems, and work. Although metaphorical uses are possible for all of the various combinations of verb shape, form, and construction analyzed above, they are not distributed evenly. We find the most metaphorical uses with the goal-object construction, which means that *погрузить/po-gruzit'* is largely excluded from metaphorical use.<sup>30</sup> Metaphorical uses are also attracted to the use of past participles and reduced constructions. Although we find metaphorical uses with both the unprefixed simplex *гружить/gruzit'* and two of the prefixed Natural Perfectives, *нагружить/na-gruzit'* and *загружить/za-gruzit'*, the latter verb, prefixed in *za-*, is the one most often used in metaphorical expressions. Below we examine all three verbs and the metaphorical uses that are most common for each.

The simplex *гружить/gruzit'* is used to describe human beings as the goals for the loading of a metaphorical theme that is either information as in (19) or problems as in (20):

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<sup>30</sup> While *погрузить/po-gruzit'* in its ‘load’ meaning is rarely used metaphorically, this is possible in its ‘sink, immerse’ meaning, as in this example: *Сквозь частый переплёт большого окна виднелась погруженная/ро-груженная в сумерки долина.* ‘Through the heavy grating on the big window one could see the valley **immersed** in darkness.’ [И. А. Ефремов. Озеро горных духов (1942–43)]

- (19) Следующие 15 минут я «*гружу/gružu*» его информацией о своей родине – острове Сахалин.<sup>31</sup>  
 ‘During the next 15 minutes I “**load**” him with information about my homeland, the island of Saxalin.’
- (20) Беспомощной личности, чтобы она не «*гружила/gruzila* вас своими проблемами», просто не надо давать советы.<sup>32</sup>  
 ‘You should simply not give advice to a helpless person so that they won’t **dump** their problems on you [lit: **load** you with their problems].’

*Nagruzitъ/na-gruzit'* likewise focuses on human beings in the goal-object construction. Here the theme is most often either information, as in (21), or work, as in (22). In addition the *na*-prefixed Natural Perfective can describe the loading of words with meaning, as in (23):

- (21) Хачатрян не сдержал неудовольствия от того, что Коломнин, которого он торопился «*нагрузить/na-gruzit'*» информацией, бесконечно отвлекается.<sup>33</sup>  
 ‘Хаčatrjan didn’t hide his frustration at the way Kolomnin, whom he was in a hurry to “**load**” with information, was constantly getting distracted.’
- (22) Необходим был профессионал, который бы стал «пароходом», *нагрузил/na-gruzil* себя всей работой.<sup>34</sup>  
 ‘What we needed was a professional, someone who could become a “steamship” and **load** himself **up** with all the work.’

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<sup>31</sup> [Дмитрий Коваленин. Марафонец Мураками (2002) // «Домовой», 2002.11.04]

<sup>32</sup> [Татьяна Блажнова. Карл Густав Маннергейм. Мемуары (2000) // «Карьера», 2000.02.01]

<sup>33</sup> [Семен Данилюк. Бизнес-класс (2003)]

<sup>34</sup> [И. Э. Кио. Иллюзии без иллюзий (1995–99)]

- (23) *После символистов... слово утратило вес; акмеисты захотели было его загрузить/на-gruzit' – но...*<sup>35</sup>

'After the symbolists... the word lost its weight; the acmeists would have liked to **load it up**, but...'

*Загрузить/za-gruzit'* can likewise describe the loading of human beings with both information and work, as in (24–25), but can additionally refer to the loading of devices with both types of themes, as in (26–28). Notice also that whereas all other examples in this section use the goal-object construction, example (26) uses the theme-object construction.

- (24) *Ради бога, Андрей Максимов «загрузит/za-gruzit» вас этой информацией.*<sup>36</sup>

'For goodness sake, Andrej Maksimov **will "load"** you with that information.'

- (25) *Заседание Госсовета по культуре загрузит/za-gruzit работой сотрудников Министерства культуры на ближайшие несколько лет...*<sup>37</sup>

'The agenda of the State Council on Culture **will load up** the members of the Ministry of Culture with work for several years to come...'

- (26) *Результаты экспорта загружены/za-gruženy в препроцессор...*<sup>38</sup>

'The export results are **loaded** into the preprocessor...'

- (27) *Старались загрузить/za-gruzit' свои компьютеры в две смены.*<sup>39</sup>

'They tried to **load up** their computers in two shifts.'

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<sup>35</sup> [Дмитрий Быков. Орфография (2002)]

<sup>36</sup> [Юлия Юнина. Москвич - состояние души // Аргументы и факты, 2001.02.14]

<sup>37</sup> [Андрей Рeut. Госсовет готов спасти российскую культуру // «Газета», 2003]

<sup>38</sup> [Знакомьтесь: ваш новый маэстро (2003) // «Строительство», 2003.05.26]

<sup>39</sup> [Петр Акимов. Плата за страх (2000)]

- (28) ...электростанции *загружают/за-gruzyat* работой лишие турбины?<sup>40</sup>  
 ‘...will the electrical power-plants **load up** additional turbines with work?’

The distribution of metaphorical uses across the two prefixes *na-* and *za-* is motivated by the meanings of these prefixes. Recall that *na-* is associated with the meanings SURFACE and ACCUMULATION, whereas *za-* has the meanings COVER, FILL, and CHANGE TO A FIXED STATE. *Za-* has a broader complex of meanings, so it makes sense that this prefix is also more versatile in metaphorical uses. In relation to burdens, a human being can be understood either as a surface since we can pile a burden onto someone’s back and arms (cf. example (9) above), or as a container (more specifically the head and brain) that can be filled up. It appears that words are understood as surfaces that bear meaning in Russian motivating *na-*, whereas computers and other devices serve as containers for information and work motivating *za-*. The emphasis on the human being or device that receives the load motivates the preponderance of the goal-object construction in metaphor, as well as the use of both passive and reduced variants, which serve to further narrow the focus.

#### 4.6. Prepositions

As opposed to metaphorical uses, which are most prevalent in the goal-object construction, the use of prepositions is restricted only to the theme-object construction. Here also we see the influence of the meaning of the prefix on the selection of the preposition. Two prepositions are used to mark the goal in the theme-object construction: *на* ‘onto’ and *в* ‘into’. The preposition *на* ‘onto’ is typically used with destinations that are understood as surfaces, as in *на стол* ‘onto the table’ and *на пол* ‘onto the floor’. The preposition *в* ‘into’ is typically used with destinations that are understood as containers, as in *в коробку* ‘into the box’ and *в холодильник* ‘into the refrigerator’. In principle both prepositions are possible in the theme-object construction because one can either load things **onto** surfaces such as barges, sleds, and the backs of humans or animals, or load things **into** containers such as

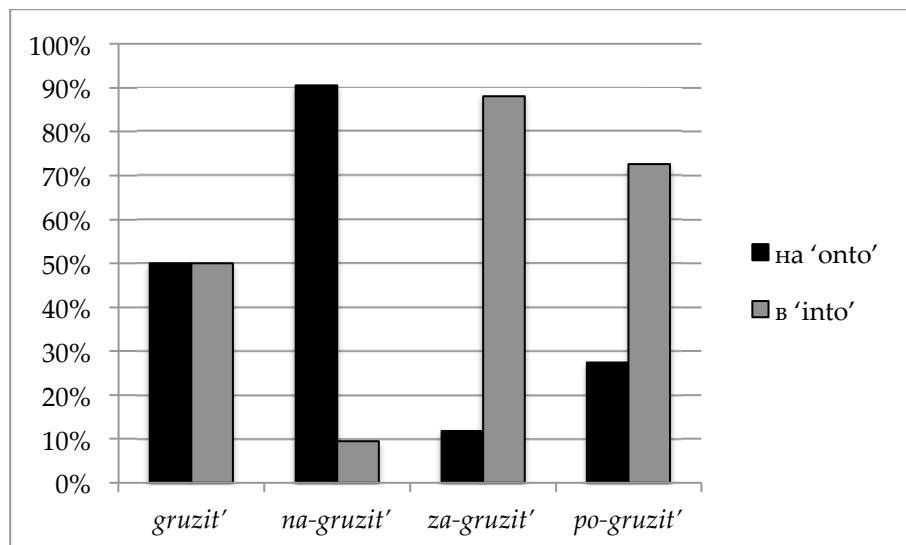
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<sup>40</sup> [Веселящий газ (2003) // «Новая газета», 2003.01.16]

trucks, trains, and barrels. Table 5 shows the distribution of these two prepositions across the four 'load' verbs, visualized in terms of percentages in Figure 5. Because the goal appears only in the full version of the theme-object construction and because the reduced version is often found when passive forms are used, this data is restricted only to non-passive forms in the full variant of the theme-object construction. There are a total of 411 examples of this type in our database.

**Table 5.** Numbers of Examples of Prepositions in Theme-Object Constructions with Active Forms

	Goal Marked with Preposition <i>na</i> 'onto'	Goal Marked with Preposition <i>в</i> 'into'
<i>грузить/gruzit'</i>	67	67
<i>нагрузить/na-gruzit'</i>	19	2
<i>загрузить/za-gruzit'</i>	7	52
<i>погрузить/po-gruzit'</i>	54	143



**Figure 5.** Percentage of Prepositions Used with Each Verb in Theme-Object Constructions with Active Forms

The distribution is clearly different across the four 'load' verbs and statistical significance is confirmed by a chi-square test, which yields the following values: chi-square = 59.83, degrees of freedom = 3, p-value = 6.4<sup>e-13</sup>. The effect size is 0.38, which is considered a medium-large effect.

The simplex *гружить/gruzit'* of course has no prefix and also has no preference for a preposition: the division here is exactly 50%–50%. Examples (29–30) illustrate the use of *гружить/gruzit'* with the two prepositions:

- (29) *Потом с помощью автокрана предполагалось гружить/gruzit' бревна на баржу...*<sup>41</sup>  
 'Then the plan was to **load** the logs onto the barge with the help of a crane...'
- (30) *...в бочки на фабрике грузили/gruzili повидло.*<sup>42</sup>  
 '...they **loaded** jam into barrels at the factory.'

Each of the prefixed verbs shows a preference for one preposition over the other. *Нагружить/na-gruzit'* strongly prefers *на* 'onto' as in (31), although *в* 'into' is possible as in (32):

- (31) *Вместе с тёткой я нагрузил/na-gruzil на ослика два мешка...*<sup>43</sup>  
 'Together with my aunt I **loaded** two sacks onto the donkey...'
- (32) *Форс предложил еще нагружить/na-gruzit' в кабины тонны две камня, чтобы самолет не мог всплыть...*<sup>44</sup>  
 'Fors suggested also **loading** two tons of rock into the cabins so that the plane couldn't float up to the surface...'

The prefixes *za-* and *po-* show the opposite tendency, preferring *в* 'into' as in (34) and (36), though *на* 'onto' is possible as in (33) and (35):

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<sup>41</sup> [Григорий Дементьев, Александр Ткачев. Мунозеро // «Юность», 1972]

<sup>42</sup> [Николай Климонтович. Далее — везде (2001)]

<sup>43</sup> [Фазиль Искандер. Первое дело (1956)]

<sup>44</sup> [В. А. Обручев. Коралловый остров (1947)]

- (33) *Свинцовые гробы... загрузили/за-gruzili на телеги...*<sup>45</sup>  
 'They **loaded** the lead coffins onto carts...'
- (34) *Кроме того, в машину загрузили/за-gruzili огромный рюкзак с парашютом, пару канистр, вещи, инструмент и кое-какую мелочь.*<sup>46</sup>  
 'In addition they **loaded** into the car an enormous backpack containing a paraglider, a couple of canisters, personal belongings, tools, and some miscellany.'
- (35) *Мертвцов, погрузив/po-gruziv на сани в одном исподнем, вывезли из зоны ногами вперёд.*<sup>47</sup>  
 'After **loading** the corpses onto the sled in just their underwear, they transported them out of the zone feet first.'
- (36) *Погрузив/po-gruziv с помощью шофера в машину свои вещи, Тамара всю дорогу до города продремала.*<sup>48</sup>  
 'After **loading** her things into the car with the help of the driver, Tamara dozed all the way to town.'

The pattern of preposition selection is consistent with the meanings that the prefixes bring to the Natural Perfectives. *Грузить/gruzit'* has no prefix and it also has no preference. The prefix *na-* is associated with the meaning SURFACE, and thus selects the preposition that describes surface contact, *на 'onto'*, with which it is also etymologically related. Because *za-* can mean FILL, it is more appropriate with goals that are containers and use the *в 'into'* preposition. This preposition is also most compatible with the CHANGE TO A FIXED STATE meaning of *za-*, since filling a container puts it in a new state that is less flexible—once a container is filled more cannot be added. *Po-* is a bit more balanced, perhaps due to its more diffuse meaning, though it also prefers *в 'into'*.

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<sup>45</sup> [Владимир Черкасов. Чёрный ящик (2000)]

<sup>46</sup> [Юрий Нечетов. Зимние каникулы (2004) // «За рулём», 2004.03.15]

<sup>47</sup> [Юрий Давыдов. Синие тюльпаны (1988–89)]

<sup>48</sup> [Петр Акимов. Плата за страх (2000)]

#### 4.7. Summary of Constructional Profiling Analysis of *грузить/gruzit'* 'load' and Its Natural Perfectives

Our constructional profiling analysis of the 'load' verbs confirms Corollary 3 of the Overlap Hypothesis because we find that each prefix shows a different distribution of the theme-object and goal-object constructions, and this difference is related to the difference in the meanings of the prefixes. The differences among the prefixes are statistically significant, even when we take into account other factors such as the use of active vs. passive forms and full vs. reduced constructions. This finding is further corroborated by data on the distribution of metaphorical uses and prepositions. The prefix *na-* prefers the goal-object construction, where it can focus on vehicles and animate beings that are conceived of as surfaces; this is consistent with the SURFACE and ACCUMULATE meanings of the prefix. The prefix *za-* has a broader complex of meanings that allow it to use both constructions: the ATTACH meaning supports use of the theme-object construction, the FILL and COVER meanings support use of the goal-object construction, and the CHANGE TO A FIXED STATE meaning supports use of both constructions. In addition, the FILL meaning makes *загрузить/za-gruzit'* compatible with goals that are conceived of as containers. *Po-* is more diffuse, but shows a clear preference for the theme-object construction, in contrast to the other two prefixes. All three of the prefixes narrow down the meaning of the simplex verb *грузить/gruzit'* 'load', and each prefix does this in a unique way. None of these findings are consistent with Corollary 3 of the Empty Prefix Hypothesis, according to which we would not expect to find statistically significant differences.

It is the fact that *грузить/gruzit'* 'load' has three Natural Perfectives that makes this close comparison across *na-*, *za-*, and *po-* possible. It may seem that *грузить/gruzit'* is a very unusual verb because it has three Natural Perfectives instead of just one. But as we will see in chapter 5, over one-fourth of simplex imperfectives in Russian that form Natural Perfectives have more than one of them. In principle it would therefore be possible to carry out constructional profiling analysis on the remaining 385 verbs that show prefix variation, which is the topic of our next chapter.

## CHAPTER 5

## Prefix Variation

The Empty Prefix Hypothesis is related to the traditional “pair” model of Russian aspect.<sup>1</sup> According to this model, Russian verbs appear in pairs, with one perfective verb and one imperfective verb that have the same meaning. Examples of aspectual pairs are *nucamъ/pisat'* [imperfective]—*нануцамъ/на-pisat'* [perfective] which both mean ‘write’ and *nepenucamъ/pere-pisat'* [perfective]—*непенуцыватъ/pere-pisyvat'* [imperfective] ‘rewrite’. A “pair” of course means exactly two. In both this chapter and chapter 6 we show that some Russian verbs have more than one aspectual partner verb. In other words, instead of pairs of verbs that share the same meaning, sometimes there are three, four, five, six, or even seven verbs that are aspectual correlates.

In this chapter we look at simplex verbs that have two or more Natural Perfectives formed by attaching prefixes. When a simplex verb can use more than one prefix to form Natural Perfectives, we call this “prefix variation.”<sup>2</sup> We saw one example of prefix variation in chapter 4, with *грузить/gruzit'* ‘load’, which forms three Natural Perfectives with three different prefixes: *нагрузить/на-gruzit'*, *загрузить/за-gruzit'*, and *погрузить/по-gruzit'*. Is *грузить/gruzit'* ‘load’ just an isolated example? How extensive is prefix variation in Russian? If prefix variation is extensive, is it systematic? These are the questions we explore in this chapter. We take as our point of departure relevant corollaries of the Empty Prefix and Overlap Hypotheses.

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<sup>1</sup> For a discussion of the relationship between the Empty Prefix Hypothesis and the “pair” model of Russian aspect, see section 1.3.

<sup>2</sup> Prefix variation is distinct from prefix stacking (Svenonius 2004b). Prefix variation involves the use of two or more prefixes to form two or more Natural Perfectives. Prefix stacking is the use of two or more prefixes simultaneously in a single verb as in *новы-брасывать/po-vy-brasyvat'* ‘throw out one by one’, where the prefixes *po-* and *vy-* cooccur. Prefix stacking is not an issue in the formation of Natural Perfectives; it is restricted to the formation of Specialized and Complex Act Perfectives. Prefix stacking is accommodated in the cluster model of Russian aspect (Janda 2007).

### 5.1. Corollaries to Be Tested

**Corollary 4 of the Empty Prefix Hypothesis:** Because prefixes have no meaning in Natural Perfectives, there is no reason for any simplex verb to use more than one prefix. Prefix variation should not exist, or should be minimal. If prefix variation does occur, it should be random and should not reflect any semantic pattern.

**Corollary 4 of the Overlap Hypothesis:** Because prefixes retain their meaning in Natural Perfectives, it is possible that more than one prefix might be appropriate for use with a given simplex verb. Prefix variation is possible because different prefixes can show different kinds of overlap with the meanings of simplex verbs. Different kinds of overlap include interaction with different parts of the meanings of simplex stems, which are generally less specific in their meanings than their Natural Perfectives. Prefix variation should be systematic and should reflect semantic patterns.

Under the logic of the Empty Prefix Hypothesis, the meaning of the prefix equals zero. But zero is a single discrete value and there cannot be multiple different zeroes, so there is no motive for adding more than one zero-valued prefix to a simplex verb. Even if we accept that prefix variation might happen because language is a complex, untidy system, it should be relatively marginal and uninteresting. The Overlap Hypothesis makes room for the possibility that the meaning of a simplex verb could overlap with the meanings of more than one prefix. The Overlap Hypothesis furthermore predicts that prefix variation should be systematic and clearly governed by the meanings of the prefixes involved.

We use two strategies to test these corollaries of the Empty Prefix and Overlap Hypotheses. First we look at some statistics in order to find out how much prefix variation there is and whether there are any general patterns. Then we make some case studies and look for evidence that overlap in meaning is responsible for prefix variation.<sup>3</sup>

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<sup>3</sup> A more detailed presentation of this study is available in Janda and Lyashevskaya 2011a.

## 5.2. The Extent of Prefix Variation

Judging from textbooks and grammars, it is easy to get the impression that each simplex verb forms one and only one prefixed Natural Perfective. But if you look up *гружать/gruzit'* ‘load’ in the Ožegov and Švedova (2001) dictionary, you find that it uses three prefixes, *za-*, *na-*, and *po-*, to form perfective partner verbs. Is this just an exception? The answer to this question has long been buried in hundreds of entries scattered across the pages of dictionaries. Fortunately the Exploring Emptiness database (<http://emptyprefixes.uit.no/>; henceforth “EE database”) makes this information easy to access. The statistics cited in this section are extracted from the EE database.

There are 1,429 imperfective simplex verbs in Russian that form Natural Perfectives via prefixation. These simplex verbs form 1,981 Natural Perfectives. This means that there are 552 (39%) more Natural Perfectives than there would be if each simplex formed only one Natural Perfective. 1,043 simplex verbs do behave exactly as the pair model and the Empty Prefix Hypothesis would predict: they select one and only one prefix. But 386 (27%) simplex verbs show prefix variation. In sum, while the majority of simplex verbs do not participate in prefix variation, we cannot say that prefix variation is rare either. Prefix variation is a minority phenomenon, but it is also robust, not just a matter of a few exceptions that we might safely put aside.

Prefix variation can involve up to six prefixes that attach to a single simplex verb. Table 1 on page 142 gives examples of the range of prefix variation, as well as numbers of simplex verbs that are involved. Table 1 tells us there are 283 simplex verbs that form two Natural Perfectives like *вязнуть/vjaznut'* ‘get stuck’, 75 simplex verbs that form three Natural Perfectives like *гружать/gruzit'* ‘load’, etc. The last column of Table 1 lists the prefix combination that is found with each example. A prefix combination is a particular selection of prefixes that are used by one or a group of simplex verbs that participate in prefix variation. Thus *вязнуть/vjaznut'* ‘get stuck’ has the prefix combination *za-| u-* producing both *завязнуть/za-vjaznut'* and *увязнуть/u-vjaznut'* ‘get stuck’, but this is only one of many prefix combinations found among the 283 simplex verbs that use two prefixes to form Natural Perfectives.

Table 1. Range of Prefix Variation and Illustrative Examples

Overall Statistics		Illustrative Examples		
number of prefixed Natural Perfectives	number of simplex verbs that form this many Natural Perfectives	simplex imperfective	prefixed Natural Perfectives	prefix combination
1	1,043	<i>nucamb/pisat'</i> 'write'	<i>nanucamb/na-pisat'</i>	(not applicable)
2	283	<i>възмутb/vjaznut'</i> 'get stuck'	<i>завъзмутb/za-vjaznut'</i> , <i>узвъзмутb/u-</i> <i>vjaznut'</i>	<i>za-</i>   <i>u-</i>
3	75	<i>ръзумb/gruzit'</i> 'load'	<i>заръзумb/za-gruzit'</i> , <i>наръзумb/na-</i> <i>gruzit'</i> , <i>ногръзумb/по-gruzit'</i>	<i>za-</i>   <i>na-</i>   <i>po-</i>
4	21	<i>матамb/marat'</i> 'soil'	<i>ездмарамb/зы-marat'</i> , <i>замарамb/за-marat'</i> , <i>измарамb/из-marat'</i> , <i>намарамb/на-marat'</i>	<i>vy-</i>   <i>za-</i>   <i>iz-</i> <i>na-</i>
5	4	<i>мотамb/motat'</i> 'wind'	<i>замотамb/за-motat'</i> , <i>намотамb/на-</i> <i>мотат'</i> , <i>поломотамb/по-motat'</i> , <i>проломотамb/про-motat'</i> , <i>умотамb/у-motat'</i>	<i>za-</i>   <i>na-</i>   <i>po-</i> <i>pro-</i>   <i>u-</i>
6	3	<i>мазамb/mazat'</i> 'smear'	<i>бълмазамb/ву-mazat'</i> , <i>замазамb/за-mazat'</i> , <i>измазамb/из-mazat'</i> , <i>намазамb/на-mazat'</i> , <i>полмазамb/по-mazat'</i> , <i>промазамb/про-</i> <i>mazat'</i>	<i>vy-</i>   <i>za-</i>   <i>iz-</i> <i>na-</i>   <i>po-</i>   <i>pro-</i>

From Table 1 we deduce that most prefix variation involves combinations of two prefixes; we call these binary combinations. Seven of the sixteen perfectivizing prefixes are listed among the examples in Table 1: *vy-*, *za-*, *iz-*, *na-*, *po-*, *pro-*, *u-*. Do all prefixes participate in prefix variation? Are some prefixes more frequent in prefix variation than others? Table 2 addresses these questions by looking at prefix variation from the perspective of individual prefixes.

**Table 2.** Prefix Variation from the Perspective of Individual Prefixes

Prefix	Total number of Natural Perfectives with this prefix	Number of simplex verbs that use this prefix in prefix variation	Number of prefixes this prefix combines with
<i>po-</i>	417	164	14
<i>s-</i>	281	123	15
<i>za-</i>	237	115	15
<i>o(b)-</i>	226	83	13
<i>na-</i>	177	81	12
<i>pro-</i>	142	44	12
<i>vy-</i>	123	87	13
<i>raz-</i>	87	56	13
<i>iz-</i>	68	48	12
<i>u-</i>	63	38	13
<i>v(o)z-</i>	57	19	9
<i>ot-</i>	55	25	10
<i>pri-</i>	30	18	11
<i>pere-</i>	9	7	6
<i>pod-</i>	6	4	5
<i>v-</i>	3	3	5

Table 2 is arranged according to the total number of Natural Perfectives in the second column, presented in descending order. For example, there are 417 Natural Perfectives formed with the prefix *po-*, and 164 of those involve prefix variation. Among those 164 cases of prefix variation, *po-* is combined with fourteen other prefixes (all ex-

cept *v-*). Table 2 shows that prefix variation involves all sixteen prefixes, and that the extent to which a prefix is engaged in prefix variation is roughly keyed to the overall frequency of the prefix. Highly frequent prefixes like *po-*, *s-*, and *za-* are also more often involved in prefix variation and can be combined with all or nearly all other prefixes. *Pro-* and *vy-* deviate from this pattern, since *vy-* is involved in nearly twice as much prefix variation as *pro-* even though *vy-* is overall a less common prefix. We also note that *v(o)z-* is somewhat more resistant to prefix variation than other prefixes with similar total frequency. However, even the rarest of the “purely perfectivizing” prefixes, *v-*, is strongly engaged in prefix variation. All three verbs that form Natural Perfectives with *v-* do so in the context of prefix variation: *колоть/kolot'* ‘stab, chop’ with the prefix combination *v-|za-|raz-|u-*, *нумать/putat'* and *нуматься/putat'sja* ‘tangle’, both with the prefix combination *v-|za-|pere-|s-*. Our case studies in section 5.3 address the differences in meanings that are expressed by prefixes in prefix variation.

Based on the information in Table 2, it is reasonable to suspect that some prefix combinations are fairly common, while others will be less common or non-existent. This is indeed the case. Table 3 collects all the prefix combinations that are used by three or more simplex verbs. A more complete version of this table (listing also prefix combinations that are attested for only 2, 1, or zero verbs) is available at our website ([http://emptyprefixes.uit.no/variation\\_eng.htm](http://emptyprefixes.uit.no/variation_eng.htm)).

**Table 3.** Prefix Combinations Used by Three or More Simplex Verbs

Prefix combination	Illustrative example of a simplex verb with this combination	Number of simplex verbs with this prefix combination
<i>po- s-</i>	<i>валить/valit'</i> ‘topple’	34
<i>za- o(b)-</i>	<i>глохнуть/gloxnut'</i> ‘become deaf; subside’	23
<i>o(b)- po-</i>	<i>беспокоить/bespokoit'</i> ‘upset’	18
<i>na- po-</i>	<i>вредить/vredit'</i> ‘harm’	12
<i>po- u-</i>	<i>терять/terjat'</i> ‘lose’	11
<i>vy- po-</i>	<i>браниться/branit'sja</i> ‘quarrel’	10

<i>na- s-</i>	<i>вратъ/vrat'</i> 'lie'	10
<i>za- na-</i>	<i>балъзамироватъ/bal'zamirovat'</i> 'embalm'	9
<i>po- raz-</i>	<i>веселитъ/veselit'</i> 'cheer'	9
<i>za- iz-</i>	<i>мучить/tučit'</i> 'torture'	8
<i>za- s-</i>	<i>планироватъ/planirovat'</i> 'plan'	8
<i>vy- s-</i>	<i>ткать/tkat'</i> 'weave'	7
<i>za- pro-</i>	<i>компостировать/kompostirovat'</i> 'punch, clip'	7
<i>po- pri-</i>	<i>грозить/grozit'</i> 'threaten'	7
<i>v(o)z- raz-</i>	<i>кипятиться/kipjatit'sja</i> 'boil'	6
<i>iz- po-</i>	<i>калечить/kalečit'</i> 'cripple'	6
<i>iz- po- s-</i>	<i>дохнуть/doxnut'</i> 'die'	6
<i>vy- pro-</i>	<i>полоть/polot'</i> 'weed'	5
<i>za- u-</i>	<i>вязнуть/vjaznut'</i> 'get stuck'	5
<i>na- raz-</i>	<i>мякнуть/mjaknut'</i> 'soften'	5
<i>vy- iz-</i>	<i>купатъ/kupat'</i> 'bathe'	4
<i>vy- na-</i>	<i>драить/drait'</i> 'polish'	4
<i>vy- o(b)-</i>	<i>зябнуть/zjabnut'</i> 'feel cold'	4
<i>za- po-</i>	<i>деваться/devat'sja</i> 'get to'	4
<i>za- po- s-</i>	<i>вечереть/večeret'</i> 'grow dark'	4
<i>iz- raz-</i>	<i>кромсать/kromsat'</i> 'cut carelessly'	4
<i>o(b)- raz-</i>	<i>жиреть/žiret'</i> 'grow fat'	4
<i>o(b)- s-</i>	<i>валять/valjat'</i> 'roll; drag'	4
<i>pro- s-</i>	<i>вертеть/vertet'</i> 'twirl'	4
<i>vy- za-</i>	<i>желтить/želtit'</i> 'make yellow'	3
<i>vy- za- na-</i>	<i>зубрить/zubrit'</i> 'cram'	3
<i>vy- raz- s-</i>	<i>кроить/kroit'</i> 'cut'	3
<i>na- ot-</i>	<i>волгнуть/volgnut'</i> 'become damp'	3
<i>o(b)- pere-</i>	<i>крестить/krestit'</i> 'baptize'	3
<i>ot- pro-</i>	<i>рецензировать/recenzirovat'</i> 'review, criticize'	3
<i>ot- pro- s-</i>	<i>корректировать/korrektirovat'</i> 'correct'	3
<i>pro- raz-</i>	<i>будить/budit'</i> 'waken'	3

Thirty-seven prefix combinations are represented in Table 3, beginning with *po-|s-*, which is found with thirty-four simplex verbs like

*валитъ/valit'* ‘topple’.<sup>4</sup> Thirty-two of these are binary combinations, while five involve three prefixes: *iz-|po-|s-*, *za-|po-|s-*, *vy-|za-|na-*, *vy-|raz-|s-*, and *ot-|pro-|s-*. All other prefix combinations are either rather rare (found with only one or two simplex verbs) or non-existent. Table 3 gives more evidence that binary combinations are particularly prominent: many more simplex verbs are associated with binary combinations than with larger combinations (see Table 1), and nearly all prefix combinations containing more than two prefixes are rare or not found. For these reasons we will focus primarily on binary combinations.

Theoretically it is possible to make 120 (= (16x15)/2) binary combinations of sixteen prefixes. In addition to the thirty-two binary combinations in Table 3, there are fifty-seven that are rare and thirty-one that are not found at all. Let’s take a look at these first.

Given the high overall individual frequencies of *o(b)-* and *pro-* listed in Table 2, we might expect *o(b)-|pro-* to be a common prefix combination. However, *o(b)-|pro-* is rare, found with only two verbs that are nearly synonymous: *mprezvity/trezvit'* ‘make sober’ (itself a fairly rare verb) and *mprezvetъ/trezvet'* ‘become sober’. Both *omprezvety/o-trezvet'* and *nepromrezvetъ/pro-trezvet'* can be glossed as ‘sober up’, but they are not identical. *Пропрэзветъ/pro-trezvet'* is much more common in description of sobering up after drinking (see example (1)); it is found in 276 examples in the Russian National Corpus, as opposed to 93 examples of *omprezvety/o-trezvet'*. However, *omprezvety/o-trezvet'* is more likely to be used metaphorically to describe a sudden change of one’s mental state, as in example (2):

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<sup>4</sup> Table 3 presents only exact full combinations, not examples for which a given combination is also found as a subset of larger combinations. For example, *za-|po-* is listed as involving four verbs in Table 3, but there are an additional four verbs that have the *za-|po-|s-* combination, listed directly below *za-|po-*. Taken together, these two lines represent prefix variation found among eight simplex verbs, all of which can form Natural Perfectives with both *za-* and *po-*. In our case studies in section 5.3 we include all instances of a given combination, both in isolation and as a subset of larger combinations.

- (1) Уже ожидая трамвай, я начал трезветь. А сейчас *протрезвел/pro-trezvel* окончательно.<sup>5</sup>  
 'I was starting to sober up already while waiting for the tram.  
 And now I am entirely sober.'
- (2) *Отрезвели/o-trezveli*, когда увидели, что армия – это серьезно.<sup>6</sup>  
 'They became sober when they saw that the army is no joke.'

We see in the examples that *протрезветь/pro-trezvet'* and *отрезветь/o-trezvet'* can both describe the same change of state, but they do so in slightly different ways and the differences correspond to what we already know about the meanings of *o(b)-* and *pro-* from the studies in chapters 2 and 3. *Pro-* is resistant to expressing punctual changes of state because it focuses on progress through time, such as gradual saturation. This is compatible with the usual process of becoming sober after intoxication, which takes time, as indicated in example (1). The prototype of *o(b)-* is AROUND and *отрезветь/o-trezvet'* 'sober up' represents the IMPOSE/ACQUIRE A NEW FEATURE meaning of the prefix. It makes sense that this verb can describe a sudden change brought about by external events like being exposed to the harsh realities of army life in example (2). These two prefixes share very little common ground, so it is perhaps not surprising that they are rarely found in combination.

Table 4 on page 148 presents the binary combinations that are not found at all. Both frequency and meaning are probably responsible for excluding the prefix combinations listed in Table 4. Twenty-seven of these combinations include the three prefixes with the lowest overall frequency in Natural Perfectives: *pere-*, *pod-*, and *v-* (see Table 1). Several of these have in addition incompatible meanings, for example, *v-|vy-*, which represents the unlikely combination of INTO for *v-* and OUT OF A CONTAINER for *vy-*. Meaning is also incompatible in the unattested combinations of more frequent prefixes, as in *ot-|pri-*, which would have to find common ground between DEPART for *ot-* and ARRIVE for *pri-*. The case studies in the next section explore compatible and incompatible meanings found in binary prefix combinations.

<sup>5</sup> [Павел Мейлахс. Отступник // «Звезда», 2002]

<sup>6</sup> [Вячеслав Морозов. Адмирал ФСБ (2004) // «Наш современник», 2004.03.15]

**Table 4.** The 31 Unattested Prefix Combinations

<i>v-</i>   <i>v(o)z-</i>	<i>v-</i>   <i>pri-</i>	<i>iz-</i>   <i>pod-</i>	<i>pere-</i>   <i>pri-</i>
<i>v-</i>   <i>vy-</i>	<i>v-</i>   <i>pro-</i>	<i>na-</i>   <i>pere-</i>	<i>pere-</i>   <i>pro-</i>
<i>v-</i>   <i>iz-</i>	<i>v(o)z-</i>   <i>iz-</i>	<i>na-</i>   <i>pod-</i>	<i>pere-</i>   <i>raz-</i>
<i>v-</i>   <i>na-</i>	<i>v(o)z-</i>   <i>ot-</i>	<i>o(b)-</i>   <i>pod-</i>	<i>pere-</i>   <i>u-</i>
<i>v-</i>   <i>o(b)-</i>	<i>v(o)z-</i>   <i>pere-</i>	<i>ot-</i>   <i>pere-</i>	<i>pod-</i>   <i>pro-</i>
<i>v-</i>   <i>ot-</i>	<i>v(o)z-</i>   <i>pod-</i>	<i>ot-</i>   <i>pod-</i>	<i>pod-</i>   <i>raz-</i>
<i>v-</i>   <i>po-</i>	<i>v(o)z-</i>   <i>pri-</i>	<i>ot-</i>   <i>pri-</i>	<i>pod-</i>   <i>u-</i>
<i>v-</i>   <i>pod-</i>	<i>vy-</i>   <i>pere-</i>	<i>pere-</i>   <i>pod-</i>	

### 5.3. Case Studies of Prefix Variation

We present four case studies of binary prefix combinations listed in Table 3: *za-* | *o(b)-*, *za-* | *u-*, *iz-* | *raz-*, and *ot-* | *pro-*. In order to represent the phenomenon of prefix variation more broadly in this study, we include simplex verbs that have any of these pairs of prefixes, even if they are in larger combinations. Thus, for example, our case study of *za-* | *u-* includes not only simplex verbs like *взнутъ/vjaznut'* ‘get stuck’ that form Natural Perfectives only with these two prefixes, but also verbs like *момамъ/motat'* ‘wind’ (see Table 1), because those two prefixes are found in the combination *za-* | *na-* | *po-* | *pro-* | *u-* (*za-* and *u-* are boldfaced to make them easy to spot). We see in our case studies that prefix variation is motivated both by compatible meanings that give near synonyms, and by incompatible meanings that give contrasting Natural Perfectives. Most examples show both some compatibility and some contrast. This analysis builds upon the meanings of the “small” and “big” prefixes established in chapters 2 and 3. The tables below list the meanings associated with the “small” prefixes that are relevant for each verb. The “big” prefix *za-* is involved in two of the case studies below. As we recall from chapter 3, the main meanings of *za-* found among Natural Perfectives are CHANGE TO A FIXED STATE, COVER, FILL, and ATTACHMENT. The “big” prefix *pro-* is involved in one of the case studies, and we recall that its meanings are THROUGH, THOROUGH, and DURATION. Tables 5–7 below suggest semantic groups based on compatibility between the meanings of the prefixes in prefix combinations. While prefix combinations *za-* | *o(b)-*, *za-* | *u-*, and *iz-* | *raz-* are motivated

primarily by compatible meanings, *ot- | pro-* involves contrasting meanings, so it is not possible to suggest semantic groups.

### 5.3.1. The Simplexes that Form Natural Perfectives with *za- | o(b)-*

Table 5 on pages 150–51 reveals clear patterns in the use of the *za- | o(b)-* prefix combination. The majority of simplex verbs with this prefix combination use *za-* because they express either CHANGE TO A FIXED STATE or COVER, and *o(b)-* because they express the meaning IMPOSE/ACQUIRE A NEW FEATURE. In other words, we find here verbs that express a change of state that involves the acquisition of a new feature. Examples (3–6) show that the Natural Perfectives prefixed with *za-* and *o(b)-* can be very nearly synonymous. In these examples, both *заледенеть/za-ledenet'* and *обледенеть/ob-ledenet'* ‘freeze’ are used to describe the freezing of a road as well as psychological freezing:

- (3) *Она [дорога] была облита водой и заледенела/за-ledenela, как стальная.*<sup>7</sup>  
‘It [the road] had been flooded with water and **had frozen** like steel.’
- (4) *Кое-где, где из склона сочилась вода. Дорога оледенела/o-ledenela...<sup>8</sup>*  
‘Water was seeping out of the hillside somewhere. The road **had frozen...**’
- (5) *Я заледенел/za-ledenel от непонятного ужаса...<sup>9</sup>*  
‘I **froze** from incomprehensible horror...’
- (6) *Начальник станции оледенел/o-ledenel в ожидании...<sup>10</sup>*  
‘The station master **froze** in anticipation...’

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<sup>7</sup> [Алексей Иванов. Сердце Пармы (2000)]

<sup>8</sup> [В. А. Обручев. Мои путешествия по Сибири (1948)]

<sup>9</sup> [Михаил Анчаров. Как Птица Гаруда (1989)]

<sup>10</sup> [Евгений Евтушенко. «Волчий паспорт» (1999)]

Table 5. Simplex Verbs that Select the Prefix Combination *za-* | *o(b)-*

Semantic group	Simplex verb	<i>za-</i> meaning	<i>o(b)-</i> meaning	Prefix combination
CHANGE OF STATE	<i>dopezenemb/derevenet</i> 'stiffen' <i>nememb/nemet</i> 'grow dumb, numb'	CHANGE TO A FIXED STATE CHANGE TO A FIXED STATE	IMPOSE/ACQUIRE A NEW FEATURE IMPOSE/ACQUIRE A NEW FEATURE	<i>za-</i>   <i>o(b)-</i> <i>za-</i>   <i>o(b)-</i>
	<i>kocnenemb/kostenet</i> 'stiffen, grow numb'	CHANGE TO A FIXED STATE	IMPOSE/ACQUIRE A NEW FEATURE	<i>za-</i>   <i>o(b)-</i>
	<i>kocnenemb/kočnet</i> 'grow numb (cold)'	CHANGE TO A FIXED STATE	IMPOSE/ACQUIRE A NEW FEATURE	<i>za-</i>   <i>o(b)-</i>
	<i>λednenemb/lednet</i> 'freeze, grow numb'	CHANGE TO A FIXED STATE	IMPOSE/ACQUIRE A NEW FEATURE	<i>za-</i>   <i>o(b)-</i>
	<i>λednenemb/ledeñit</i> 'chill'	CHANGE TO A FIXED STATE	IMPOSE/ACQUIRE A NEW FEATURE	<i>za-</i>   <i>o(b)-</i>
	<i>cmañtymby/stynut</i> 'cool, freeze'	CHANGE TO A FIXED STATE	IMPOSE/ACQUIRE A NEW FEATURE	<i>za-</i>   <i>o(b)-</i>
	<i>cnytmb/styt</i> 'cool, freeze'	CHANGE TO A FIXED STATE	IMPOSE/ACQUIRE A NEW FEATURE	<i>za-</i>   <i>o(b)-</i>
	<i>zrybemby/grubet</i> 'grow coarse'	CHANGE TO A FIXED STATE	IMPOSE/ACQUIRE A NEW FEATURE	<i>za-</i>   <i>o(b)-</i>
	<i>çercmveñtib/čerstvet</i> 'harden'	CHANGE TO A FIXED STATE	IMPOSE/ACQUIRE A NEW FEATURE	<i>za-</i>   <i>o(b)-</i>
	<i>nyanemb/pjanet</i> 'get inebriated'	CHANGE TO A FIXED STATE	IMPOSE/ACQUIRE A NEW FEATURE	<i>za-</i>   <i>o(b)-</i>
	<i>xmeñtib/xnjet</i> 'get inebriated'	CHANGE TO A FIXED STATE	IMPOSE/ACQUIRE A NEW FEATURE	<i>za-</i>   <i>o(b)-</i>
	<i>zloçtymby/gloxnut</i> 'grow deaf'	CHANGE TO A FIXED STATE	IMPOSE/ACQUIRE A NEW FEATURE	<i>za-</i>   <i>o(b)-</i>
	<i>zlyutmb/glušit</i> 'stun'	CHANGE TO A FIXED STATE	IMPOSE/ACQUIRE A NEW FEATURE	<i>za-</i>   <i>o(b)-</i>
	<i>moproumb/motročit</i> 'fool, pull wool over one's eyes'	CHANGE TO A FIXED STATE	IMPOSE/ACQUIRE A NEW FEATURE	<i>za-</i>   <i>o(b)-</i>
	<i>mpasumb/travit</i> 'poison'	CHANGE TO A FIXED STATE	IMPOSE/ACQUIRE A NEW FEATURE	<i>vy-</i>   <i>na-</i>   <i>za-</i> <i>lo(b)-</i>   <i>po-</i>   <i>s-</i>
	<i>c6uðemeλbcnøsamb/</i>	CHANGE TO A FIXED STATE	IMPOSE/ACQUIRE A NEW FEATURE	<i>za-</i>   <i>o(b)-</i>

<i>svydetel' stvoat' p'rixdobut'</i> 'testify' <i>prykhodobatъ p'rixdobut'</i> 'record, count'	CHANGE TO A FIXED STATE	IMPOSE/ACQUIRE A NEW FEATURE	<i>za- o(b)-</i>
<i>učinitъ činit'</i> 'fix' <i>učarpnobamъ(cя)/švartovat'(sjя)</i> 'moor'	CHANGE TO A FIXED STATE ATTACHMENT	IMPOSE/ACQUIRE A NEW FEATURE IMPOSE/ACQUIRE A NEW FEATURE	<i>za- o(b)- po- u-</i> <i>za- o(b)- pri-</i>
<i>surround</i>			
<i>gniavetъ/všivet'</i> 'become lice- ridden'	COVER	IMPOSE/ACQUIRE A NEW FEATURE	<i>za- o(b)-</i>
<i>meļudīsētъ   šehudīvet'</i> 'become scabby'	COVER	IMPOSE/ACQUIRE A NEW FEATURE	<i>za- o(b)-</i>
<i>nariškemъ/parsīvet'</i> 'become mangy'	COVER	IMPOSE/ACQUIRE A NEW FEATURE	<i>za- o(b)-</i>
<i>uperišķētъ īcerīvet'</i> 'become wormy'	COVER	IMPOSE/ACQUIRE A NEW FEATURE	<i>za- o(b)-</i>
<i>čerītibъ/černit'</i> 'blacken' <i>mjanutibъ(cя)/tumanit'(sjя)</i> 'darken, obscure'	COVER COVER	IMPOSE/ACQUIRE A NEW FEATURE IMPOSE/ACQUIRE A NEW FEATURE	<i>vy- za- o(b)-</i> <i>za- o(b)-</i>
<i>kol'čežbatы/kol'čežat'</i> 'place a ring on'	COVER	SURROUND/ ENCLOSE	<i>za- o(b)-</i>
<i>kymatibъ/kutat'</i> 'wrap' <i>cnēklatibъ/steklit'</i> 'cover with glass' <i>plomđūrošamъ/plombirovat'</i> 'fill'	COVER COVER FULL	ENVELOP ENVELOP, AFFECT A SURFACE AFFECT A SURFACE	<i>za- o(b)- u-</i> <i>za- o(b)-</i> <i>za- o(b)-</i>

However, some of these verbs do differ in meaning, and often the Natural Perfectives prefixed in *za-* are used more to express concrete meanings, while the Natural Perfectives in *o(b)-* can be used metaphorically, as in (7–8):

- (7) У нее *занемела/за-nemela* правая нога и стала совсем неживая.<sup>11</sup>

'Her right leg **went numb** and became completely lifeless.'

- (8) На его губах появилась улыбка, а я от гнева *онемела/o-nemela*.<sup>12</sup>

'A smile appeared on his lips and I **became numb** with rage.'

Other verbs in this group give some evidence of complementary meanings, as in *зачинить/za-činit'* белые 'mend underwear' vs. *очи-нить/o-činit'* карандаши 'sharpen a pencil (from all sides)'; and *за-свидетельствовать/za-svidetel'stvovat'* почтение 'express respect' vs. *освидетельствовать/o-svidetel'stvovat'* больного 'examine a patient'.

Some of the verbs in Table 5 could arguably be placed in both the CHANGE OF STATE group and the COVER/SURROUND group, for example, *туманить(sя)/tumanit'(sja)* 'darken, obscure' (literally 'cover in fog') and *кутать/kutat'* 'wrap'. The two Natural Perfectives of the second verb are very similar in meaning, but they tend to behave somewhat differently, as we see in (9–10). While *закутать/za-kutat'* 'wrap' usually involves a human agent using some kind of cloth, *окутать/o-kutat'* 'wrap' more often describes the effect of clouds or mist.

- (9) Ваксон отвел свою девушку в каюту, уложил ее в постель и *закутал/за-kutal* в одеяло...<sup>13</sup>

'Vakson took his girlfriend to the berth, put her in the bed, and **wrapped** her in a blanket...'

- (10) Мистический туман *окутал/o-kutal* гору...<sup>14</sup>

'A mystical fog **enveloped** the mountain...'

<sup>11</sup> [Галина Щербакова. Актриса и милиционер (1999)]

<sup>12</sup> [Дарья Донцова. Доллары царя Гороха (2004)]

<sup>13</sup> [Василий Аксенов. Таинственная страсть (2007)]

<sup>14</sup> [Анатолий Лернер. Преддверие... (2003) // «Вестник СПА», 2003.11.26]

The last verb in Table 5, *пломбировать/plombirovat'* ‘fill, seal’, has fairly distinct Natural Perfectives. When prefixed with *za-*, it represents the FILL meaning of the prefix and is used to refer to the filling of teeth, as in (11). With *o(b)-* the meaning is AFFECT A SURFACE, and this Natural Perfective is used for applying seals to secure something, as in (12):

- (11) *Вчера я хвастался тем, как чудесно Слава мне запломбировал/за-plombiroval зубы.*<sup>15</sup>  
‘Yesterday I bragged about what a great job Slava **did filling** my teeth.’
- (12) *Мы все сложили в мешки, погрузили в железнодорожный вагон, опломбировали/o-plombirovali их и двинулись к Харькову.*<sup>16</sup>  
‘We put everything in bags, loaded them into the railroad car, **sealed** them and departed for Xar’kov.’

In sum, while the *za- | o(b)-* prefix combination is mostly motivated by compatible meanings, there is also evidence for contrast.

### 5.3.2. The Simplexes that Form Natural Perfectives with *za- | u-*

The simplex verbs that form their Natural Perfectives with *za-* and *u-* highlight the common ground these prefixes share. *Za-* in its CHANGE TO A FIXED STATE meaning and *u-* in its HARM meaning both refer to events that reduce capacity and mobility, yielding the DAMAGE group. A similar relationship is present in the CHANGE OF STATE group, which also focuses on both fixed states and reduction. The WRAP group capitalizes on the fact that both prefixes are associated with covering and putting things in containers.

The semantic groups in Table 6 (page 154) intersect. All types of DAMAGE and WRAPPING result in a CHANGE OF STATE, and all but one of the CHANGE OF STATE verbs (*чинить* ‘fix’) also involve reduced

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<sup>15</sup> [Юлий Даниэль. Письма из заключения (1966–70)]

<sup>16</sup> [И. Г. Григоров. Махно (1965–75)]

Table 6. Simplex Verbs that Select the Prefix Combination *za-* | *u-*

Semantic group	Simplex verb	<i>za-</i> - meaning	<i>u-</i> - meaning	Prefix combination
DAMAGE	<i>ðæsiumb/davit'</i> 'press, crush'	CHANGE TO A FIXED STATE	HARM	<i>za-</i>   <i>po-</i>   <i>u-</i>
	<i>ðyuumb/dusit'</i> 'strangle'	CHANGE TO A FIXED STATE	HARM	<i>za-</i>   <i>po-</i>   <i>u-</i>
	<i>լորսմբ/morit'</i> 'exterminate'	CHANGE TO A FIXED STATE	HARM	<i>vj-</i>   <i>za-</i>   <i>po-</i>   <i>u-</i>
	<i>հօլոմբ/kolot'</i> 'stab'	CHANGE TO A FIXED STATE	HARM	<i>v-</i>   <i>za-</i>   <i>raz-</i>   <i>u-</i>
	<i>եղոյմբ/čjanut'</i> 'wilt'	CHANGE TO A FIXED STATE	HARM	<i>za-</i>   <i>u-</i>
	<i>որամծօնմբ/trambowat'</i> 'press down'	CHANGE TO A FIXED STATE	MOVE DOWNWARDS	<i>vj-</i>   <i>za-</i>   <i>u-</i>
	<i>ըալցումբ/vjaznut'</i> 'get stuck'	CHANGE TO A FIXED STATE / ATTACHMENT	KEEP/SAVE	<i>za-</i>   <i>u-</i>
CHANGE OF STATE	<i>zacumb/gasit'</i> 'extinguish'	CHANGE TO A FIXED STATE	REDUCE	<i>za-</i>   <i>po-</i>   <i>u-</i>
	<i>լուսկումբ/molknut'</i> 'fall silent'	CHANGE TO A FIXED STATE	REDUCE	<i>za-</i>   <i>s-</i>   <i>u-</i>
	<i>հյումանի/kułtat'</i> 'wrap'	COVER	COVER COMPLETELY	<i>za-</i>   <i>o(b)-</i>   <i>u-</i>
WRAP	<i>լոռամբ/motat'</i> 'wind, reel'	COVER	COVER COMPLETELY	<i>za-</i>   <i>na-</i>   <i>po-</i>   <i>pro-</i>   <i>u-</i>
	<i>լակօնմբ/pakovat'</i> 'pack'	COVER	PLACE/FIT	<i>za-</i>   <i>u-</i>
	<i>սփնումբ/činiit'</i> 'fix; commit'	CHANGE TO A FIXED STATE	HARM	<i>za-</i>   <i>o(b)-</i>   <i>po-</i>   <i>u-</i>
OTHER	<i>ունամբ/plattit'</i> 'pay'	CHANGE TO A FIXED STATE	MOVE AWAY	<i>za-</i>   <i>u-</i>

availability or mobility, and are thus akin to some kind of DAMAGE. All of the WRAPPING verbs entail loss of mobility, as well as an increase in control. Thus the intersection of DAMAGE, WRAP, and CHANGE OF STATE define nearly the whole group of verbs with the *za-|u-* combination, with the exception of *чинить/činit'* 'fix; commit' and *платить/platit'* 'pay'.

Some of the Natural Perfectives with these two prefixes are very nearly synonymous, as we see in these examples of *задушить/za-dušit'* and *удушить/u-dušit'*, both of which mean 'strangle' from the DAMAGE group:

- (13) *Горянский был известен тем, что задушил/za-dušil охранника в немецком концентрационном лагере.<sup>17</sup>*

'Gorjanskij was famous for having **strangled** a guard in a German concentration camp.'

- (14) *Югов обиделся и ударом кулака сбил тетку наземь, схватил за горло и удушил/u-dušil.<sup>18</sup>*

'Jugov took offense and knocked the lady to the ground with his fist, grabbed her by the throat, and **strangled** her.'

However, differences are also discernible in the DAMAGE group. For example, whereas *заколоть/za-kolot'* means 'slaughter', *уколоть/u-kolot'* 'stab, chop' is less catastrophic, as in (15–16):

- (15) *Тут же дядя Гриша заколол/za-kolol его ударом ножа.<sup>19</sup>*

'On the spot uncle Griša **slaughtered** him with a blow of his knife.'

- (16) *Петрович, кажется, уколол/u-kolol обо что-то палец...<sup>20</sup>*

'It seems that Petrovič **pricked** his finger on something...'

<sup>17</sup> [Сергей Довлатов. Чемодан (1986)]

<sup>18</sup> [Анатолий Приставкин. Долина смертной тени (1999) // «Дружба народов», 1999.09.15]

<sup>19</sup> [Анатолий Рыбаков. Тяжелый песок (1975–77)]

<sup>20</sup> [Андрей Грачев. Ярый-3. Ордер на смерть (2000)]

The Natural Perfectives of the CHANGE OF STATE group can also be interchangeable in some contexts, as in (17–18). However, these two prefixed perfectives are motivated in slightly different ways: *заязнуть/za-vjaznut'* 'get stuck' involves getting caught on something as signalled by the ATTACH and CHANGE TO A FIXED STATE meanings of *za-*, whereas *увязнуть/u-vjaznut'* 'get stuck' focuses on the downward direction of *u-* and describes sinking down into something.

- (17) *Идет заяц мимо болота, вдруг видит – лось в трясине **заяз/за-vjaz**.<sup>21</sup>*

'A hare walks by a swamp and suddenly sees that a moose **has gotten stuck** in the mire.'

- (18) *Представляешь, я сегодня на берегу в глине **увяз/u-vjaz**, а она меня выволовкала.<sup>22</sup>*

'Just imagine, today I **got stuck** in the clay on the riverbank, and she pulled me out.'

In the previous case study we saw that the Natural Perfectives of *чинить/činit'* 'fix; commit' were distinct and that is the case with this prefix combination as well. We recall that *зачинить/za-činit'* means 'repair'; *учинить/u-činit'*, however, usually means 'commit' in the sense of undertaking an act of violence or a crime.

The last verb in Table 6, *платить/platit'* 'pay' is a unique example, drawing upon the EXCHANGE meaning of *za-* (which is rather rare among Natural Perfectives, but here refers to an exchange of goods or services for money) and the MOVE AWAY meaning of *u-*. In many contexts the two Natural Perfectives can be substituted for each other. However, *заплатить/za-platit'* has much higher frequency than *уплатить/u-platit'*, is more versatile in metaphorical use (*дорого заплатить/za-platit' за свободу* 'pay dearly for one's freedom'), and only *заплатить/za-platit'* can be used for regularly scheduled payments such as *зарплату/пенсию/стипендию* 'salary/pension/stipend'.

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<sup>21</sup> [Коллекция анекдотов: звери (1970–2000)]

<sup>22</sup> [Владислав Крапивин. Болтик (1976)]

### 5.3.3. The Simplexes that Form Natural Perfectives with *iz-* | *raz-*

This prefix combination is also dominated by a group of simplex verbs denoting DAMAGE. These verbs are associated with the cluster of EXHAUSTION meanings of *iz-*, but with the APART meaning of *raz-* and its closest neighbors CRUSH and SPREAD. While the Natural Perfectives can sometimes be used interchangeably, there are also differences. The Natural Perfectives prefixed in *iz-* tend to refer to a more extreme action, while the verbs prefixed in *raz-* tend to be more neutral or focused on splitting an object into two or more pieces, as in (19–20):

- (19) *В город пришли казаки и **искрошили/iz-krošili** 300 человек наших.*<sup>23</sup>

‘The Cossacks came to the city and **killed** 300 of our men.’

- (20) *Галя развернула вафельку, **раскрошила/raz-krošila** ее и на ладошке протянула воробью.*<sup>24</sup>

‘Galja opened the waffle, **crushed** it, and held it out on her palm for the sparrow.’

We see more complementary meanings with *мять/mjat* ‘crumple, knead’ and *полосовать/polosovat* ‘flog, make into stripes’, where each Natural Perfective focuses on one part of the range of meanings in the simplex verb. When referring to something that can be wrinkled, we use *измять/iz-mjat* *листок* ‘crumple a piece of paper’, but with substances that can be worked we get expressions like *размять/raz-mjat* *глину* ‘knead clay **until soft**’. The verb *полосовать/polosovat* ‘flog, make into stripes’ is derived from the noun *полоса* ‘stripe’, and can refer both to the stripes that appear on flesh when flogged or to stripe-shaped objects. Thus we have two Natural Perfectives: *исполосовать/iz-polosovat* ‘flog’ and *располосовать/raz-polosovat* ‘make into bars’ (a term used in metallurgy).

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<sup>23</sup> [Виктор Кин. Записные книжки (1921–37)]

<sup>24</sup> [Геннадий Николаев. Вещие сны тихого писха // «Звезда», 2002]

Table 7. Simplex Verbs that Select the Prefix Combination *iz-*-|*raz-*

Semantic group	Simplex verb	<i>iz-</i> - meaning	<i>raz-</i> - meaning	Prefix combination
DAMAGE	<i>кромсать/kromsat'</i> 'cut up' <i>крошить/krošit'</i> 'crumble' <i>крошиться/krošit'sja'</i> 'crumble'	EXHAUSTIVE RESULT EXHAUSTIVE RESULT	APART APART	<i>iz-</i> -  <i>raz-</i> - <i>iz-</i> -  <i>ra-</i> -  <i>raz-</i> -
	<i>мельчить/mel'čit'</i> 'crumble' <i>молочь/toloc'</i> 'pulverize'	EXHAUSTIVE RESULT EXHAUSTIVE RESULT	APART APART	<i>iz-</i> -  <i>raz-</i> - <i>iz-</i> -  <i>ra-</i> -
	<i>превратить/trepat'</i> 'beat, fray' <i>мять/mjat'</i> 'crumple, knead'	NEGATIVE EXHAUSTION NEGATIVE EXHAUSTION	APART CRUSH	<i>iz-</i> -  <i>ot-</i> -  <i>po-</i> -  <i>raz-</i> - <i>iz-</i> -  <i>ra-</i> -  <i>s-</i> -
	<i>полосовать/polosovat'</i> 'flog, make into stripes'	EXHAUST A SURFACE	SPREAD	<i>iz-</i> -  <i>ra-</i> -
OTHER	<i>менять/menjat'</i> 'change' <i>monumъ/topit'</i> 'heat'	OUT OF A CONTAINER EXHAUSTIVE RESULT	SPREAD SOFTEN/ DISSOLVE	<i>iz-</i> -  <i>o(b)-</i> -  <i>po-</i> -  <i>raz-</i> -  <i>s-</i> - <i>vy-</i> -  <i>iz-</i> -  <i>po-</i> -  <i>raz-</i> -  <i>s-</i> -  <i>u-</i> -

Verbs listed as OTHER in Table 7 on page 158 use different prefixes according to the direct objects they take. *Изменить/iz-menit'* 'change' can combine with a wide variety of objects, but *разменять/raz-menjat'* '(ex)change' is limited to use with exchangeable items like *квартиру/сторублевку* 'apartment/100-ruble note'. Compare also *испопить/iz-topit'* *печь* 'heat up a stove' vs. *распопить/raz-topit'* *лед* 'melt ice'.<sup>25</sup>

#### 5.3.4. The Simplexes that Form Natural Perfectives with *ot-|pro-*

The previous three case studies yield some clear semantic groups, such as verbs that involve damage or verbs that involve covering. These groups are "natural" in the sense that they are parallel to groups of objects for which we have category names, like *clothing* for the group that contains shirts, pants, and socks, or *furniture* for the group that contains chairs, sofas, and tables. There are, of course, other kinds of groups that are more diverse but have a logical connection just the same. For example the group of *things you would take on a picnic* might include food, drinks, plates, napkins, a blanket, charcoal, a cooler, a radio, and a frisbee. The verbs that form their Natural Perfectives with *ot-* and *pro-* are more like this latter group. Rather than being grouped according to similarities of meaning, these verbs are grouped according to their capacity to express two different meanings. The Natural Perfectives formed by these verbs are distinct and usually cannot be substituted for each other. The first five verbs in Table 8 on page 160 combine with *ot-* in its STOP AT THE ENDPOINT meaning, where the focus is on an outcome or product. With the prefix *pro-* the THROUGH and THOROUGH meanings put the focus on one entire performance and the fact that all of the steps have been completed. Although *фильтровать/fil'trovat'* 'filter' refers usually to chemical processing with both prefixes, *отфильтровать/ot-fil'trovat'* focuses on the production of the filtrate in (21), while *профильтровать/pro-fil'trovat'* focuses on the process and the movement of the substance through the apparatus in (22).

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<sup>25</sup> Note that *менять/menjat'* 'change' shows some morphological inconsistency in that it is sometimes realized as *-менить/-menit'* when prefixed. Note also that *распопить/raz-topit'* *печь* is possible, but it means 'begin to heat up a stove'.

**Table 8.** Simplex Verbs that Select the Prefix Combination *ot-|pro-*

Simplex verb	<i>ot-</i> meaning	<i>pro-</i> meaning	Prefix combination
<i>рецензировать/recenzirovat'</i> 'review'	STOP AT THE ENDPOINT	THROUGH/ THOROUGH	<i>ot- pro-</i>
<i>корректировать/korrektirovat'</i> 'correct, proof-read'	STOP AT THE ENDPOINT	THROUGH/ THOROUGH	<i>ot- pro- s-</i>
<i>репетировать/repetirovat'</i> 'rehearse'	STOP AT THE ENDPOINT	THROUGH/ THOROUGH	<i>ot- pro- s-</i>
<i>фильтровать/fil'trovat'</i> 'filter'	STOP AT THE ENDPOINT	THROUGH/ THOROUGH	<i>ot- pro-</i>
<i>трубить/trubit'</i> 'trumpet'	STOP AT THE ENDPOINT	THROUGH/ THOROUGH	<i>ot- pro-</i>
<i>реагировать/reagirovat'</i> 'react'	BOUNCE	THROUGH	<i>ot- pro- s-</i>
<i>чеканить/čekanit'</i> 'stamp (metal)'	BOUNCE	THOROUGH	<i>vy- ot- pro- raz-</i>
<i>штампововать/štampovat'</i> 'stamp'	BOUNCE	THOROUGH	<i>vy- za- na- ot-</i> <i> pro- raz-</i>
<i>стегать/stegat'</i> 'whip, baste'	MAKE NON- FUNCTIONAL	THROUGH	<i>vy- ot- pro-</i>

(21) *Образовавшийся раствор отфильтровали/ot-fil'trovali, после чего фильтрат имел щелочную реакцию.<sup>26</sup>*

'They **filtered** the solution that was formed and after that the filtrate underwent an alkaline reaction.'

(22) *Рэлей тщательно просушил и профильтровал/pro-fil'troval новый газ, продувая его через фарфоровую трубку с горячими медными опилками.<sup>27</sup>*

'Raleigh carefully dried and **filtered** the new gas, blowing it through a porcelain tube with heated brass filings.'

The verbs associated with *ot-* in its BOUNCE meaning show a similar distinction, as we see in (23–24). *Отштамповать/ot-štampovat'*

<sup>26</sup> [обобщенный. Клуб «Юный химик» // «Химия и жизнь», 1968]

<sup>27</sup> [М. П. Бронштейн. Солнечное вещество (1936)]

'stamp, mint' produces a product, namely a new batch of coins, whereas *проштамповатъ/pro-štampovat'* 'stamp' takes a law, resolution, or decision through the approval process.

- (23) *На Санкт-Петербургском монетном дворе отштамповали/ot-štampovali* новую партию серебряных рублейиков.<sup>28</sup>  
 'At the Saint Petersburg mint they **stamped out** a new batch of silver rubles.'
- (24) *Пропутинская Дума проштампowała/pro-štampovala антинародный закон о реформах ЖКХ.*<sup>29</sup>  
 'The pro-Putin Duma **put its stamp on** an anti-national law for reforms in housing and public utilities.'

The last verb in Table 8, *стегать/stegat'* 'whip, baste', has two very different Natural Perfectives. *Отстегать/ot-stegat'* 'whip' refers to delivering punishment, while *простегать/pro-stegat'* is motivated by the THROUGH meaning of the prefix and means 'go through many times', usually describing sewing; see examples (25–26):

- (25) *Роберта отстегал/ot-stegal, а Яна похвалил и пожурил.*<sup>30</sup>  
 'He **whipped** Robert, but he praised Jan and let him off easy.'
- (26) *Раньше так именовали только одеяла, сейчас же с развитием этого шитья все простеганные/pro-stegannye изделия называют квилтами.*<sup>31</sup>  
 'Earlier the term was reserved only for blankets, but now with the expansion of this type of sewing, all artefacts that **have been stitched through** are called quilts.'

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<sup>28</sup> [Еремей Парнов. Александрийская гемма (1990)]

<sup>29</sup> [С. Н. Решульский. Мертвая петля жилищной политики (2003) // «Советская Россия», 2003.09.01]

<sup>30</sup> [Василий Аксенов. Таинственная страсть (2007)]

<sup>31</sup> [Лариса Банакина. Лоскутки жизни (2003) // «Народное творчество», 2003.10.20]

### 5.4. Summary of Analysis of Prefix Variation

Our study shows that prefix variation is a significant phenomenon in Russian. Prefix variation involves all sixteen prefixes and over one-quarter of all simplex verbs that form Natural Perfectives. While most prefix variation involves the combination of two prefixes with a simplex verb, we find that up to six prefixes can be attached to a single verb to form Natural Perfectives.

Prefix variation is clearly governed by the meanings of the prefixes involved. There are some simplex verbs that can show overlap with more than one prefix, and these verbs tend to cluster in groups according to their meanings. While many examples of prefix variation are motivated by similarity of meanings across prefixes, we can detect in most cases differences between the Natural Perfectives of a given simplex verb, and in some cases the prefixes focus on possible contrasts within the meaning of the simplex verb. There is a delicate balance between similarity and contrast, since even very near synonyms can have slightly different meanings in some contexts. We also see that meaning is a deciding factor in prefix combinations that are rare or do not exist, since prefixes with meanings that are incompatible avoid prefix variation.

Overall our study of prefix variation supports the Overlap Hypothesis because there is evidence that prefix variation is governed by relationships between the meanings of the prefixes and the meanings of simplex verbs. Prefix variation exists because different prefixes can focus the meanings of a simplex verb in different ways. Prefix variation thus enriches the spectrum of shades of meaning that verbs can express in Russian.

Prefix variation is a challenge to the Empty Prefix Hypothesis because if the prefixes were empty, there would be no reason to attach more than one empty prefix to a verb. And there would be no reason for a simplex verb to have more than one aspectual partner. There remains one more study in this book, chapter 6 on aspectual triplets. Like prefix variation, triplets are counterexamples to the model of the aspectual pair, although in this case we will look instead at Natural Perfectives that have two imperfective partner verbs.

## CHAPTER 6

## Aspectual Triplets

An aspectual triplet is a set of three verbs, consisting of a simplex verb, a prefixed Natural Perfective, and a secondary imperfective derived via suffixation of the Natural Perfective. All three verbs have the same lexical meaning and the members of a triplet set differ from each other primarily in terms of aspect. An example is the triplet set *множиться/množit'sja* (simplex imperfective), *умножиться/u-množit'sja* (prefixed Natural Perfective), *умножататься/u-množat'sja* (secondary imperfective, with the suffix *-a*). All three verbs mean ‘multiply’. Traditionally, however, scholars of Russian linguistics have not acknowledged the existence of aspectual triplets; they have assumed instead that secondary imperfectives are formed only from Specialized Perfectives, not from Natural Perfectives.<sup>1</sup>

Triplets, like prefix variation explored in chapter 5, present a challenge to the “pair” model of Russian aspect. The “pair” model assumes that Russian verbs are organized aspectually into pairs with a single imperfective verb and a single perfective verb. Prefix variation contradicts the “pair” model because many imperfective simplex verbs have two or more perfective partner verbs. Triplets show us that, in addition, many perfective verbs have not one, but two imperfective partner verbs.

Are triplets a marginal phenomenon or are they widespread? If triplets are widespread, is their behavior governed by the meanings of the prefixes? We address these questions in our evaluation of corollaries of the Empty Prefix and Overlap Hypotheses in this chapter.<sup>2</sup>

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<sup>1</sup> In the original *Academy Grammar of Russian*, Vinogradov, Istrina, and Barxudarov (1952: 431–32) state that secondary imperfectives are formed from prefixed perfectives only when the prefix brings a new lexical meaning to the verb. Townsend (1975: 134–41) presents the derivation of secondary imperfectives exclusively with respect to verbs in which “the addition of a prefix... alters a stem lexically.”

<sup>2</sup> A more comprehensive analysis of Russian aspectual triplets is presented in Kuznetsova and Sokolova forthcoming.

### 6.1. Corollaries to Be Tested

**Corollary 5 of the Empty Prefix Hypothesis:** Because prefixes have no meaning in Natural Perfectives and Natural Perfectives are identical in meaning with the corresponding simplex verbs, there is no reason to derive a secondary imperfective from a Natural Perfective. Aspectual triplets should not exist or should be marginal. If aspectual triplets do occur, their use should be random and should not reflect any semantic pattern.

**Corollary 5 of the Overlap Hypothesis:** Because prefixes retain their meaning in Natural Perfectives and give them a special focus, it is possible to derive secondary imperfectives from Natural Perfectives. The use of aspectual triplets should be systematic and should reflect semantic patterns.

The purpose of the Russian imperfectivizing suffixes *-ыла/-иша*, *-ла/-я* is to supply imperfective partner verbs for perfectives as needed. This strategy is nearly universal among Specialized Perfectives, where the perfective verb would otherwise lack an imperfective partner. For example, the Specialized Perfective *nepeniscать/pere-pisat'* 'rewrite' is formed from the simplex *nucать/pisat'* 'write'. Because the Specialized Perfective has a clearly different meaning, the simplex cannot serve as its aspectual partner verb, and a secondary imperfective *nepeniscываться/pere-pisyvat'* 'rewrite' is created with the help of the suffix *-ыла*.

A Natural Perfective that is formed via prefixation of a simplex verb already has an imperfective partner verb because the simplex shares the same lexical meaning. For example, the Natural Perfective *умножиться/u-množit'sja* 'multiply' already has the imperfective partner verb *множиться/množit'sja* 'multiply'. Following the logic of the Empty Prefix Hypothesis and the "pair" model of Russian aspect, there is no need for an additional imperfective partner verb here. Nonetheless, the secondary imperfective *умножатъся/u-množat'sja* 'multiply' is robustly attested. There are nearly 500 examples like (1) of *умножатъся/u-množat'sja* 'multiply' in the Russian National Corpus.

- (1) *А ведь зазеркалье – продолжение дома, с помощью зеркал раздвигаются стены, умножается/u-tnožaetsja количество светильников.*<sup>3</sup>

'After all the use of mirrors extends one's home, with the help of mirrors the walls move apart and the number of lamps is multiplied.'

From the perspective of the Overlap Hypothesis we expect that the meaning of the simplex verb is narrowed and focused by the prefix in the formation of the Natural Perfective. If this is true, there can be slight differences in meaning between the simplex verb and its Natural Perfective. Under these circumstances it would make sense to form secondary imperfectives that emphasize the meaning specific to the Natural Perfective and make it possible to express that meaning with an imperfective verb.

Russian aspectual morphology motivates the formation of secondary imperfectives from Natural Perfectives since in a sense they fill a gap in the system. We look first at how this system works and at the same time refine our definition of triplets before proceeding to our analysis. Next we investigate the extent of aspectual triplets in Russian and then turn to a discussion of the role of meaning in the formation of secondary imperfectives from Natural Perfectives.

## 6.2. The Structure of Aspectual Triplets

There are two major strategies for forming aspectual partner verbs in Russian. One strategy adds prefixes to imperfective verbs in order to create Natural Perfectives, as in *писать/pisat'* and *написать/na-pisat'* 'write'. The other strategy adds suffixes to perfective verbs in order to create imperfective partners, as in *неписать/pere-pisat'* and *непереписывать/pere-pisyvat'* 'rewrite'. In a large study of nearly six million verb forms in the Russian National Corpus, Janda and Lyashevskaya (2011b) have shown that the two strategies produce equal effects in terms of the distribution of grammatical forms: the difference in behavior between perfective and imperfective verbs is the same regardless of which strategy (prefixes or suffixes) is used. This means that a

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<sup>3</sup> [Мария Маганова. Чары зазеркалья (2004) // «Homes and Gardens», 2004.12.01]

simplex imperfective and a secondary imperfective are equally good as imperfective verbs.

The two strategies as they are traditionally understood can be diagrammed as in Table 1.

**Table 1.** Aspectual Partner Verbs Involving Natural Perfectives and Specialized Perfectives (Traditional Model)

Simplex	Prefixed Perfective	Suffixed Secondary Imperfective
Strategy 1: Prefixation: Natural Perfectives		
делать/delat' 'do'	сделать/s-delat' 'do'	? сделыватъ/s-delyvat' 'do'
писать/pisat' 'write'	написать/na-pisat' 'write'	? написыватъ/na- pisyat' 'write'
гореть/goret' 'burn'	сгореть/s-goret' 'burn'	? сгорятъ/s-gorat' 'burn'
Strategy 2: Suffixation: Specialized Perfectives		
делать/delat' 'do'	заделать/za-delat' 'block'	заделыватъ/za-delyvat' 'block'
писать/pisat' 'write'	переписать/pere-pisat' 'rewrite'	переписыватъ/pere- pisyat' 'rewrite'
гореть/goret' 'burn'	загореть/za-goret' 'get a tan'	загорятъ/za-gorat' 'get a tan'

We use a thick line to symbolize a “wall” between the simplex verb and the prefixed perfective in the lower part of Table 1. This “wall” diagrams a difference in meaning. As noted above, *писать/pisat'* ‘write’ and *переписать/pere-pisat'* ‘rewrite’ have different meanings, and this prevents them from acting as aspectual partner verbs.<sup>4</sup> If *переписать/pere-pisat'* ‘rewrite’ is to have an imperfective partner verb, it

<sup>4</sup> There are some examples when, in restricted contexts, the simplex imperfective can serve as a partner for the Specialized Perfective (Zaliznjak, Mikaèljan, and Šmelev 2010), for example, *рвать/rvat'* зубы ‘pull out teeth’ which is used as the imperfective counterpart of *вырвать/vy-rvat'* зубы, or *писать/pisat'* на пленку ‘record’ which functions as an imperfective partner for *переписать/perepisat'* на пленку, even though *рвать/rvat'* — *вырвать/vy-rvat'* and *писать/pisat'* — *переписать/perepisat'* usually do not function as pairs.

must be derived with a suffix, as in *переписыvатъ/pere-pisyvat'* 're-write'. The same argument holds for the other examples in the lower part of Table 1. In the case of Specialized Perfectives there cannot be aspectual triplets because the simplex verb and the secondary imperfective do not share the same lexical meaning.

Otherwise, the two halves of Table 1 are very similar, except that there is a "problem" in the rightmost column in the upper portion of the table, where no secondary imperfectives are expected (symbolized by "?"). It is clear that as far as the combination of stems, prefixes, and suffixes are concerned, there is nothing that would prevent us from forming secondary imperfectives, and furthermore we would also know their meanings: *сделыватъ/s-delyvat'* 'do', *написыватъ/na-pisyvat'* 'write', and *сгоратъ/s-gorat'* 'burn'. But do these verbs exist? To varying degrees, the answer is yes, although some of them might not be acknowledged by authoritative sources. *Сделыватъ/s-delyvat'* 'do' is not attested in the Russian National Corpus, but examples can be found on the internet, as in (2). *Написыватъ/na-pisyvat'* 'write' is fairly rare: there are five attestations in the Russian National Corpus (mostly from the 19th century), but a Google search returns over 22,000 hits, among them (3). By contrast *сгоратъ/s-gorat'* 'burn' is highly frequent, with over 1100 attestations in the Russian National Corpus, including (4).

- (2) *И всё равно можно делать и сделыватъ/s-delyvat', важно делать.*<sup>5</sup>

'All the same it is possible to do things and **to get things done**, what is important is to be doing something.'

- (3) *...люди уже устали одно и тоже написыватъ/na-pisyvat', отвечая на такие типичные вопросы.*<sup>6</sup>

'...people have already gotten tired of **writing** the same thing over again, answering such typical questions.'

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<sup>5</sup> <http://protiv-putina.ru/forum/index.php?showtopic=16&start=16.000000000000004>; accessed December 5, 2011.

<sup>6</sup> <http://www.biznet.ru/topic64701.html>; accessed December 5, 2011.

- (4) *Те письма, у которых не было обратного адреса, актировались и сгорали/s-gorali в костерке за зданием начальной школы.*<sup>7</sup>

'The letters that didn't have a return address were put on record and **burned up** in a firepit behind the elementary school building.'

Theoretically it is possible to form secondary imperfectives from all perfective verbs in Russian. At least there is nothing about the suffixes that prevents them from being attached to prefixed perfectives. It seems that at least some Natural Perfectives do indeed form secondary imperfectives, and some such secondary imperfectives may be more frequent than others. It is true that there might be less need for secondary imperfectives since there is already a simplex verb with the same meaning. But if the Natural Perfective, thanks to the meaning of the prefix, has a more focused meaning than the simplex imperfective, then there might be situations in which a native speaker would want to use a secondary imperfective instead of the simplex verb.

The analysis of the examples in Table 1 adds precision to our definition of aspectual triplets. Aspectual triplets occur only when the prefixed perfective verb is a Natural Perfective. We do not acknowledge aspectual triplets in the case of Specialized Perfectives. It is important to keep the two types of perfectives separate and to exclude Specialized Perfectives since data on Specialized Perfectives would not be valid for testing the corollaries of the Empty Prefix and Overlap Hypotheses. This is also important because previous studies of triplets have not been so careful in observing this distinction.<sup>8</sup>

For the purposes of this study, we acknowledge as Natural Perfectives those verbs listed as such in the Exploring Emptiness database,

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<sup>7</sup> [Виктор Астафьев. Обертон (1995–96)]

<sup>8</sup> Apresjan (2005) and Zaliznjak and Mikaèljan (2010) include among their roster of triplets examples of the type *шить/šít'* 'sew' – *сшивать/s-šít'* 'sew; sew together two pieces' – *сшивать/s-šívat'* 'sew together two pieces'. What we actually have here is two sets of aspectual partner verbs: one containing a Natural Perfective and consisting of *шить/šít'* 'sew' and *сшивать/s-šít'* 'sew', and another one containing a Specialized Perfective and consisting of *сшивать/s-šít'* 'sew together two pieces' and *сшивать/s-šívat'* 'sew together two pieces'. The Natural Perfective and Specialized Perfective happen to be homonymous. We do not recognize such examples as aspectual triplets because the secondary imperfective is derived not from the Natural Perfective but from the Specialized Perfective.

which is aggregated from authoritative sources as described below and in section 1.4. The fact that we focus exclusively on Natural Perfectives is not at odds with our observation in section 6.5 that there is a fluid boundary between Natural Perfectives and Specialized Perfectives. The concepts “light” and “dark” are clearly different, despite the fact that there is a grey zone between them. One can envision a study restricted only to “light” items defined according to an accepted standard. The lack of a discrete boundary does not entail that there is no difference between “light” and “dark.” Dictionaries have standards for recognizing Natural Perfectives as opposed to Specialized Perfectives and we follow these standards.

Our next task is to explore how common aspectual triplets are in Russian, both in terms of how many Natural Perfectives form secondary imperfectives, and in terms of how frequently such secondary imperfectives are used.

### 6.3. The Extent of Aspectual Triplets

If in principle all prefixed Natural Perfectives can form secondary imperfectives, it should be possible to take a list of all the Natural Perfectives in Russian and search for evidence of triplets. This is exactly how we proceed. But our results need to be appreciated in contrast with those of previous studies, which have for the most part presented triplets as a very restricted phenomenon, usually acknowledging only forty or fewer triplets.<sup>9</sup> Based on these studies one would get the impression that triplets are a relatively marginal phenomenon in Russian. However, none of the previous studies began with a comprehensive list of the Natural Perfectives in Russian and systematically searched for all secondary imperfectives using corpus data and internet browsers. Our approach is different, and so are our results.

The “Exploring Emptiness” database (<http://emptyprefixes.uit.no>) lists 1,981 prefixed Natural Perfectives for Russian formed from 1,429 simplex imperfectives. This is the most comprehensive list of Natural Per-

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<sup>9</sup> Krakovskij (2005) lists three triplets, Jasai (2001) lists thirteen, and Apresjan (1995) offers forty triplets. Zaliznjak and Mikaèljan (2010) base their analysis on all the pairs listed in Ožegov and Švedova (2001) from which they list thirty-nine triplets, but their judgments are not based on corpus data. An exception is Veyrenc (1980) who presents a list of 190 triplets.

fectives available, aggregated from two authoritative dictionaries and a list (see description in section 1.4). Using the three imperfectivizing suffixes *-ыла/-ла*, *-са*, and *-а/-я*, we formed hypothetical secondary imperfectives for all 1,981 Natural Perfectives.<sup>10</sup> We then conducted searches for all of the hypothetical secondary imperfectives in both the Russian National Corpus and the Google search engine.<sup>11</sup> Because we know in advance that all of the Natural Perfectives in our database have corresponding simplex imperfectives, every instance where we find a secondary imperfective means that we have evidence of an aspectual triplet. Our results can be accessed on our site ([http://emptyprefixes.uit.no/triplets\\_eng.htm](http://emptyprefixes.uit.no/triplets_eng.htm)).

733 of our 1,981 hypothetical secondary imperfectives are attested in the Russian National Corpus. Many of these are of low frequency: 203 are found in from two to nine examples, and 95 are found in only one example. In terms of percentages, 37% of the hypothetical secondary imperfectives exist in the Russian National Corpus. 10% of the possible secondary imperfectives are of low frequency, and 5% are attested only once. But 22% (435) of the theoretically possible secondary imperfectives are attested in ten or more examples.

Google searches yielded even more aspectual triplets. 1,536 (77%) of the possible secondary perfectives were found. 165 (8%) are of low frequency (two to nine examples), and 92 (5%) turned up only once, but 1,279 (65%) are attested ten or more times.

We found many times more aspectual triplets than previous scholars have reported. Indeed, it appears that the aspectual triplet phenomenon has been underestimated by an entire order of magnitude. Aspectual triplets are anything but marginal. Some of them are of low frequency, but there are many that are relatively common.

Clearly Russians feel comfortable creating and using secondary imperfectives of Natural Perfectives, even though most of these are not acknowledged in dictionaries. Native speakers must also know what these secondary imperfectives mean and have strategies for how to use them in contrast with the corresponding simplex verbs. We turn to the

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<sup>10</sup> There are regular rules that govern the distribution of the three suffixes according to the type of stem that each verb has; see Townsend 1975: 134–40.

<sup>11</sup> To ensure that the corpus results reflect current usage, searches in the Russian National Corpus were conducted on the basis of the modern subcorpus of Russian (Lyashevskaya and Sharoff 2010). Google searches were conducted in April–May 2010.

meaning of the secondary imperfectives and their use in the next section.

#### 6.4. The Role of Meaning in Aspectual Triplets

Unlike other previous scholars who have examined aspectual triplets, Veyrenc (1980) suggested that the secondary imperfectives are motivated by a unified meaning. According to Veyrenc, the secondary imperfective gives particular emphasis to the result of the action. In this section we present evidence in support of Veyrenc's proposal, by showing that verbs that focus on tangible, intentional, or controllable results favor the use of the secondary imperfective.

Wherever aspectual triplets exist, there are two forms, the simplex imperfective and the secondary imperfective, that compete as the imperfective partner verbs for the Natural Perfective. In other words, a speaker who needs an imperfective verb to correspond to a Natural Perfective has a choice between the simplex and the secondary imperfective. This choice is not made uniformly. For some Natural Perfectives the simplex is the most common choice, for others the secondary imperfective predominates, and sometimes both forms are chosen with nearly equal frequency. Table 2 on page 172 presents a sample of how this choice is made across a variety of verbs that are frequently used as imperfectives in Russian.

Each row in Table 2 corresponds to an aspectual triplet for which all three verbs are attested in the Russian National Corpus. The left-most column of Table 2 lists the Natural Perfective for each triplet, along with its gloss, which is valid for all three verbs in the triplet. The next column lists the meaning of the prefix in the Natural Perfective, as established in chapters 2 and 3. The next four columns represent the competition between the simplex imperfective and the secondary imperfective. Each form is listed, along with the percentage of its use. The final column lists the total number of imperfective uses for the triplet found in the Russian National Corpus. If we take the first row, for example, the Natural Perfective is *выругатъ/vy-rugat'* 'curse' and the meaning of the prefix *vy-* for this verb is NEGATIVE EXHAUSTION. There are a total of 7,193 examples of the use of corresponding imperfective verbs attested in the Russian National Corpus. Of these, 99.99% are

**Table 2.** Competition between Simplex Imperfectives and Secondary Imperfectives in Aspectual Triplets

Natural Perfective	Prefix Meaning	Simplex Imperfective	Use	Secondary Imperfective	Use	Total # in RNC
<i>выйгнать</i> <i>/vyj-rugat'</i> 'curse'	NEGATIVE	<i>rygatъ /rugat'</i>	99.99%	<i>выйгнавать</i> <i>/vyj-rugivat'</i>	0.01%	7,193
<i>загоняться /vz-volnuyat'sja</i> 'get excited'	EXHAUSTION	<i>volnuyat'sja</i>	99.97%	<i>зашевелываться</i> <i>/vz-volnuyat'sja</i>	0.03%	7,763
<i>расплыть /raz-pajat'</i> 'melt'	AGITATE	<i>maять</i>	99.34%	<i>расплывать</i> <i>/raz-volnuyat'</i>	0.66%	3,465
<i>ошибетъ</i> <i>/o-šalet'</i> 'go crazy'	SOFTEN/ DISSOLVE	<i>tajat'</i>	87.76%	<i>расплывать</i> <i>/raz-tairat'</i>	12.24%	98
<i>зажарить</i> <i>/za-žarit'</i> 'fry'	ACQUIRE A NEW FEATURE	<i>šaletъ /šalet'</i>		<i>ошибетъ</i> <i>/o-šalet'</i>		
<i>удаюкать</i> <i>/u-bajukat'</i> 'tull to sleep'	CHANCE TO A FIXED STATE	<i>žaritъ /žarit'</i>	84.13%	<i>зажаривать</i> <i>/za-žirivat'</i>	15.87%	1,821
<i>зажмурить</i> <i>/za-žmuriť</i> 'squint'	CONTROL	<i>bajukatъ /bjukat'</i>	41.85%	<i>удаюкать</i> <i>/u-bajukivat'</i>	58.15%	454
<i>осанитъ</i> <i>/o-svijat'</i> 'bless, sanctify'	COVER	<i>žmuriť</i>	37.30%	<i>зажмуривать</i> <i>/za-žmuriat'</i>	62.70%	984
<i>замолкнуть</i> <i>/za-molknut'</i> 'shut up, fall silent'	IMPOSE A NEW FEATURE	<i>svijatъ /svijatit'</i>	20.00%	<i>осанчивать</i> <i>/o-svijasčat'</i>	80.00%	130
	CHANGE TO A FIXED STATE	<i>molknutъ /molkut'</i>	0.71%	<i>замолкнуть</i> <i>/za-molkat'</i>	99.29%	1,692

examples of the simplex *ругатъ/rugat'* and 0.01% are examples of the secondary imperfective *выругиватъ/vy-rugivat'*. The rows representing triplets are arranged according to the balance between the use of simplex imperfectives and secondary imperfectives, with triplets most preferring simplex verbs on the top and those most preferring secondary imperfectives on the bottom.

Table 2 shows that there is wide variation in the competition between simplex and secondary imperfectives in aspectual triplets. There are Natural Perfectives like *выругатъ/vy-rugat'* 'curse' that strongly prefer the simplex imperfective, there are Natural Perfectives like *замолкнуть/za-molknut'* 'shut up, fall silent' that strongly prefer the secondary imperfective, and there are Natural Perfectives that fall somewhere between these two extremes. In order to get a handle on what the difference might be, let's look at some examples from triplets where the two imperfectives are both well represented, those headed by the Natural Perfectives *убаюкать/u-bajukat'* 'lull to sleep' and *зажмурить/za-žmurit'* 'squint'. Examples (5) and (7) show the use of the simplex imperfectives *баюкать/bajukat'* and *жмурить/žmurit'*; examples (6) and (8) illustrate the use of the corresponding secondary imperfectives *убаюкивать/u-bajukivat'* and *зажмуривать/za-žmurivat'*.

- (5) *Девочка капризничала и требовала, чтобы вместо бабушки её баюкал/bajukal Димка.<sup>12</sup>*

'The girl made a fuss and demanded that Dimka **lull** her instead of her grandmother.'

- (6) *Днем Гуся убаюкивала/u-bajukivala дочь под одну и ту же песенку...<sup>13</sup>*

'During the day Gusja **lulled** her daughter **to sleep** with one and the same song...'

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<sup>12</sup> [Марк Сергеев. Волшебная галоша, или Необыкновенные приключения Вадима Смирнова, его лучшего друга Паши Кашкина и 33 невидимок из 117-й школы (1971)]

<sup>13</sup> [Таня Марчант. Квартиранты (2003) // «Лебедь» (Бостон), 2003.10.12]

- (7) *Он [кот] сидел у ножки стола и жмурил/žmurił зеленые свои глаза.*<sup>14</sup>

'It [the cat] sat by the leg of the table and **squinted** its green eyes.'

- (8) *Он мне рассказывал, что малчишкой идя домой с тренировки, зажалмуривал/за-žmuriwał глаза, проходя мимо киоска с мороженым.*<sup>15</sup>

'He told me that when he was walking home from training as a young boy, he **would squint** his eyes when he passed by the ice-cream stand.'

These examples support Veyrenc's (1980) suggestion that the secondary imperfectives focus on the result of the action. In addition, we find that the secondary imperfectives are more likely to refer to an action that is not only concluded, but repeated. In (5) with the simplex verb the girl is only interested in who will rock her, not in the result (she may or may not fall asleep). By contrast, in (6) with the secondary imperfective, lulling her daughter to sleep is something that Gusja does successfully and repeatedly during the daytime, relying on the same song every time. In (7) with the simplex verb, squinty eyes is part of the description of the cat, not anything that is intentional or produces an effect. Example (8) with the secondary imperfective is part of a larger narrative about a young boy's struggles growing up in poverty: he was always very hungry after sports practice, but he knew that his parents were poor, so he squinted his eyes every time he went by the ice-cream stand in order to avoid temptation.

These examples illustrate a trend in the distribution of the two imperfectives of an aspectual triplet. The simplex imperfective tends to describe an event where the focus is not on the result. The secondary imperfective tends to describe something that creates a result, often an intentional one, in a predictable repeated pattern. This is the overall trend, but is it connected to the meanings of the prefixes?

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<sup>14</sup> [Юрий Дружков (Постников). Волшебная школа (1984)]

<sup>15</sup> [Татьяна Тарасова, Виталий Мелик-Карамов. Красавица и чудовище (1984–2001)]

If the meanings of the prefixes are a factor, we of course expect to see their effect in the behavior of the secondary imperfectives (which have prefixes), not in the simplex verbs (which do not). Look at the prefix meanings in the second column of Table 2. The first three triplets have such a strong preference for the simplex imperfective that the secondary imperfective is very rare, found in less than 1% of imperfective uses. With all three of these one could argue that the meaning of the prefix does not indicate a concrete result that could be intentionally and repeatedly produced. Both NEGATIVE EXHAUSTION and DISSOLVE are spontaneous actions that end with something being absent, and AGITATE is not a concrete result either. The next triplet is headed by *ошаляемъ/o-šalet'* 'go crazy' with the prefix meaning ACQUIRE A NEW FEATURE, which suggests entering a new state. While acquiring a new feature is generally spontaneous and often a unique event, it can be repeated and does have a tangible result, motivating limited use for the secondary imperfective. For all other triplets in Table 2 the prefix meanings indicate intentional actions focused on results: CHANGE TO A FIXED STATE, CONTROL, COVER, and IMPOSE A NEW FEATURE. The relative ranking of these remaining triplets in terms of use of the secondary imperfective corresponds to the repeatability of the actions named by the verbs. For example, both *зажаримъ/za-žarit'* 'fry' and *замолкнумъ/za-molknut'* 'shut up, fall silent' illustrate the CHANGE TO A FIXED STATE meaning of the prefix *za-*, but the use of secondary imperfectives is rare with the former verb and nearly exclusive with the latter one. Frying is something that is less repeatable (unless one fries different items) than falling silent, which one can easily repeat.

The meanings of prefixes can add a focus to Natural Perfectives that is less apparent in the simplex verbs. If we look at the six rows in the lower portion of Table 2, the simplex verbs can have neutral interpretations that don't require any purposeful focus or conclusion. Three of them describe ongoing actions that are similar to states: 'be crazy', 'have one's eyes squinted', 'be quiet'. The three others, 'fry', 'lull', and 'bless, sanctify', can be interpreted either as processes or as repeated events. The focus that the prefixes add to the Natural Perfectives is part of the meaning of the secondary imperfectives. As we see in example (6) the secondary imperfective focuses on repeatedly gaining CONTROL over the child by putting her to sleep. In (8) the secondary imperfective emphasizes the fact that the boy intentionally COVERED his eyes by squinting in order to block his view of the ice-cream stand.

Another kind of evidence for the role of prefixes in triplets comes from the relative distribution of the prefix *po-*. As we know from chapter 1, *po-* is by far the prefix used most frequently in Natural Perfectives: 417 (21%) of all Natural Perfectives in the Exploring Emptiness database have *po-*. The high relative frequency of *po-* corresponds consistently with the data in our other studies: in chapter 4, *po-* is more frequent than either of the other two prefixes used with *грузить/gruzit'* ‘load’, and in chapter 5 we see that *po-* is also more involved in prefix variation than any other prefix. But our data show that aspectual triplets actually avoid the prefix *po-*. Given that there are 733 secondary imperfectives in the Russian National Corpus, we could expect 154 (21%) of them to have the prefix *po-*. However, only 94 (13%) *po*-prefixed secondary imperfectives are found. Apparently *po-* inhibits the formation of secondary imperfectives. Recall from chapter 3 that the meanings of *po-* relevant for Natural Perfectives are RESULT and SOME. While the RESULT meaning is compatible with the use of secondary imperfectives, the SOME meaning is problematic because it focuses on temporary engagement in an activity or partial progress along a scale rather than a full-fledged result.

### 6.5. Summary of Analysis of Aspectual Triplets

A comprehensive corpus-based analysis of aspectual triplets in Russian supports the Overlap Hypothesis. Aspectual triplets are neither a marginal nor a random phenomenon. Depending upon which source one uses, between 37% (Russian National Corpus) and 77% (Google) of Natural Perfectives form secondary imperfectives via suffixation. Like prefix variation presented in chapter 5, the extensive presence of triplets raises a challenge to the “pair” model of Russian, which assumes that Russian verbs occur in pairs consisting of one imperfective verb and one perfective verb. To compound matters, prefix variation and aspectual triplets can cooccur. Recall *гружать/gružat'* ‘load’ in chapter 4, which has three Natural Perfectives prefixed with *na-*, *za-*, and *po-*. In addition, all three of these Natural Perfectives form secondary imperfectives: *нагружать/na-gružat'*, *загружать/za-gružat'*, and *ногружать/po-gružat'* are all attested abundantly in the Russian National Corpus.

The use of secondary imperfectives is neither uniform nor random: some triplets feature nearly exclusive use of the simplex verb, some

favor the secondary imperfective, and others show a more balanced relative frequency for the two forms. The choice of simplex vs. secondary imperfective appears to be governed by the meanings of the prefixes. Secondary imperfectives are preferred when the meaning of the prefix motivates focus on a result, preferably produced intentionally and/or repeatedly. Prefix meanings that are less compatible with this meaning of secondary imperfectives reduce or exclude the use of secondary imperfectives. The SOME meaning of *po-* appears to inhibit the formation of secondary imperfectives, since we find nearly 40% fewer triplets among *po*-prefixed verbs than we would expect given overall frequencies.

Since secondary imperfectives are formed from both Specialized and Natural Perfectives, this phenomenon draws no absolute boundary between the two kinds of perfectives. This is expected from the perspective of the Overlap Hypothesis, whereby both Specialized and Natural Perfectives have meaningful prefixes, but not from the Empty Prefix Hypothesis, which assumes that Specialized and Natural Perfectives are categorically different. This does not mean, however, that Specialized and Natural Perfectives must be united in a single group. Instead there is a continuum where most examples of Specialized Perfectives cluster toward one end, many distinct examples of Natural Perfectives are found at the other end, and some examples are found in a diffuse zone in between.



## CHAPTER 7

## The Verb Classifier Hypothesis

The previous five chapters have presented evidence in support of the Overlap Hypothesis, showing repeatedly that the so-called “purely perfectivizing” prefixes of Russian are not semantically “empty,” but actually retain their meanings as evidenced by differences in distributional patterns.

If we declare victory for the Overlap Hypothesis, what does that mean? We have a lot of evidence that the meanings of verbs and prefixes overlap in Russian, but why should that be so? Why would a language have such a system? Are there any other languages that have such a system?

Our answer is that Russian can be described as a verb classifier language because it treats verbs similar to the way that nouns are treated in numeral classifier languages. Numeral classifier languages treat physical matter primarily as an array of substances that can be individuated as units. Therefore numeral classifier languages need a system to convert substances into units. Russian, as a verb classifier language, treats the experiences conveyed by verbs primarily as an array of activities and needs a system in order to convert activities into events. We thus conclude that the prefixes are meaningful, both individually and as a system.

### 7.1. The Verb Classifier Hypothesis

Here we state a new hypothesis about the role of prefixes in Natural Perfectives.

**Verb Classifier Hypothesis:** The prefixes sort the verbs according to the typical type of event expressed, similar to the way that numeral classifiers sort nouns according to the typical type of object referred to.

This hypothesis motivates and therefore subsumes the Overlap Hypothesis. The meanings of prefixes overlap with the meanings of verbs because each prefix refers to a schematic type of event, and verbs that can express that type of event are attracted to that prefix. This pattern of attraction classifies the verbs into groups (though some verbs belong to more than one group). The Verb Classifier Hypothesis takes the analysis to a new level, since it addresses the role of prefixes as a system and facilitates cross-linguistic comparisons.

The most relevant comparison here is with numeral classifier systems. We will explore numeral classifier systems in some detail first in order to get a handle on how these systems work, and then turn to an explanation of why Russian verbal prefixes constitute a verb classifier system. Since this comparison involves drawing parallels between nouns and verbs, we will also contextualize this analysis by looking at what nouns and verbs have in common.

## 7.2. Numeral Classifier Systems

John Lucy<sup>1</sup> describes a potential error a linguist could make by projecting meanings from one language onto another. Yucatec Maya, a language spoken in Central America, has a numeral classifier system.<sup>2</sup> In this language there is a noun *kib'* that is usually translated as 'candle' in English, since candles are what this noun most often refers to. If you want to make it clear that you are talking about one candle, in addition to the numeral '*un* 'one'', you need to use a classifier, *tz'iit*, often translated as 'long-thin' since it is used with long thin objects, to complete the phrase, so you say '*un-tz'iit kib'*'. At this point the linguist might interpret the numeral phrase thus: '*un-tz'iit kib*' 'one long-thin candle'. This phrase seems to contain redundant meanings because candles are typically long and thin, so the classifier *tz'iit* 'long-thin' does not seem to add any information. The classifier seems instead to be an empty formal marking added when you count long thin things, and you need to use another classifier *wáal* 'flat' when you count flat things, and other classifiers when you count things with other shapes, etc.

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<sup>1</sup> This story is recounted in detail in Lucy 2000: 331–33; see also Lucy 1992, 2004.

<sup>2</sup> Despite the fact that we use the term "numeral classifier system," what such systems classify is actually nouns, not numerals. A numeral classifier system is a type of noun classifier system.

But as Lucy points out, this interpretation is based on the erroneous assumption that Yucatec Maya makes the same divisions among objects and substances that we make in English. In English we distinguish between count nouns and mass nouns. English count nouns refer to discrete objects, have plural forms that are obligatory when referring to more than one object as in *candles*, and we can combine count nouns directly with numerals, as in *one candle*, *two sticks*, *three bananas*. English mass nouns refer to substances, rarely use plural forms like *waters*, and with mass nouns we need to assign units when we count, as in *one cup of water*, *two lumps of clay*, *three cubes of sugar*. From the perspective of English, count nouns are the norm for most things that come in pieces large enough to see or manipulate like *raisins*, *grapes*, *candles*, *sticks*, and *bananas*. Yucatec Maya, however, focuses on the substances from which objects are formed. Reference to substances is primary and often obligatory, while reference to objects is secondary and often optional (unless they are being counted). If you point to a candle and ask a Yucatec Maya speaker what it is, the answer is *kib'*. But *kib'* does not really mean 'candle', it means 'wax'. And *kib'* is representative of Yucatec Maya nouns in general, because nouns in this language refer to substances. From the perspective of Yucatec Maya, the world is an array of substances. The role of classifiers like *tz'it* and *wáal* is to specify various possible units of substances when necessary, like when counting. It is as if the count nouns in English disappeared and were replaced with mass nouns.

Here are some examples of how classifiers combine with nouns in Yucatec Maya:

**Table 1.** Examples of Numeral Classifiers in Yucatec Maya  
(from Lucy 2000: 329)

'un-tz'ít kib'	[one long-thin wax]	'one candle'
'un-tz'ít che'	[one long-thin wood]	'one stick'
'un-tz'ít nal	[one long-thin corn]	'one ear of corn'
'un-tz'ít há'as	[one long-thin banana]	'one fruit of the banana'
'un-wáal há'as	[one flat banana]	'one banana leaf'
'un-kúul há'as	[one planted banana]	'one banana tree'
'un-kúuch há'as	[one load banana]	'one bunch of bananas'

Numerical classifiers thus play an important role in Yucatec Maya: they are “unitizers.” The classifiers convert the meanings of nouns into countable units that refer to objects. We call them classifiers because they classify the nouns of the language into groups depending upon the types of units that the substances typically form. Some nouns, like *há’as* ‘banana’ combine with several classifiers, while other nouns have one characteristic classifier because their substance yields one most typical object.

The use of numerical classifiers may seem exotic, but it is common among languages in many parts of the world, especially in Asia and South America. Well-known languages that have numerical classifier systems include Chinese, Japanese, and Korean. Overall numerical classifier systems are almost as common as gender systems for nouns (like masculine, feminine, and neuter in Russian; Aikhenvald 2000: 98–124). In a survey of 400 world languages, 260 were found that have no numerical classifiers, 62 have optional numerical classifiers, and 78 have obligatory numerical classifiers.<sup>3</sup>

Though linguists have only recently begun to describe verb classifier systems, verb classifiers have been identified in some languages, most notably Chinese and Australian languages (McGregor 2002, Gerner 2009). We will first explore parallels between a numerical classifier system like the one in Yucatec Maya and the use of Russian prefixes to form Natural Perfectives and then turn to a comparison of Russian prefixes with other verb classifier systems.

### 7.3. Why Russian Prefixes Are an Aspectual Classifier System

Two scholars have recently suggested that the use of prefixes to signal aspect in Russian can be considered a classifier system.<sup>4</sup> There are

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<sup>3</sup> This survey is reported by WALS (World Atlas of Language Structures Online). You can access a map of the distribution of numerical classifiers worldwide by going to the WALS website (<http://wals.info>) and requesting the map for Feature 55A: Numerical Classifiers. WALS does not provide a survey or map for verb classifiers.

<sup>4</sup> Majsak (2005), in a typological study restricted to verbs of motion and position, claims on pp. 339–45 that perfectivizers can serve as verb classifiers in the world’s languages, and on p. 298 he includes Russian among the relevant languages. Plungjan (2011: 413–16; 2012) uses the terms “classifying effect” and “classifying perfectivization” to describe aspect in a number of languages, including the Slavic languages. Both

many good reasons to do so. We can begin with a comparison of the Yucatec Maya system of nouns with the Russian system of verbs.

The classifier system in Yucatec Maya has two types of reference: a bare noun without a classifier in Yucatec Maya refers to a substance, while objects are specified by adding classifiers. Russian has two types of verbs: imperfective, which is the default value for a simplex stem, and perfective, often signaled by the addition of a prefix. Janda (2004) showed that imperfective verbs in Russian behave like nouns that refer to substances (mass nouns), while perfective verbs behave like nouns that refer to objects (count nouns).<sup>5</sup> A substance has no edges of its own, no shape, it is uniform and continuous, and it cannot be counted. A Russian imperfective verb does not specify the beginning or end of a situation (has no edges or shape), refers to ongoing states and activities that are uniform and continuous, and does not refer to a unique completed event (is not countable). In other words, a simplex Russian verb nearly always refers to the verbal equivalent of a substance. In their unmodified forms, Russian verbs are like Yucatec Maya nouns: they see the range of situations in the world as an array of unbounded states and activities. If we want to talk about an event in Russian, we need to add a prefix and perfectivize the verb; this is parallel to using a classifier in Yucatec Maya to refer to an object.

Classifiers are associated with the use of numerals in Yucatec Maya. Aspect in Russian, and particularly perfective aspect, has been described as a type of quantification.<sup>6</sup> Perfective aspect is also associated with additional quantifiers like measured adverbials as in *прочитать/pročitat'* книгу за два часа 'read a book in two hours' and the partitive genitive as in  *выпить/vy-pit'* чаю 'drink some tea'. The use of prefixes to perfectivize verbs is thus parallel to the use of numerals

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scholars connect the idea of verb classifiers to the Overlap Hypothesis of Vey and van Schooneveld (Majsak 2005: 340; Plungjan 2011: 413).

<sup>5</sup> Janda 2004 is a large, comprehensive analysis that cannot be presented in full here. It covers fourteen parameters that distinguish fluid substances from discrete solid objects and presents parallels in the behaviors of imperfective vs. perfective verbs in Russian for all parameters. This model accounts for all recognized uses of Russian aspect. A pedagogically oriented version of the model is presented in Janda 2003.

<sup>6</sup> The identification of Russian aspect with quantification goes back at least as far as Jakobson (1957/1971: 136). See also: Smith 1991, Brinton 1991, Mourelatos 1978, Kresin 2000, and Dahl 1985. The connection between quantification and aspect is not unique to Russian; cf. Carlson 1981 and Bach 1986.

to quantify nouns. Note that Hindi-Urdu also has verb classifiers (expressed in a compound verb construction), and the use of verb classifiers in this language is restricted according to the aspect of the event described (McGregor 2002: 287); this is entirely parallel to the Russian restriction of classifiers to perfective verbs.

Classifiers in Yucatec Maya usually provide information about the shape of the referent, and this is typical of classifier languages in general.<sup>7</sup> Russian prefixes refer to the shape of an action in terms of a path through space.<sup>8</sup> This is most evident in the use of prefixes to form Specialized Perfectives from motion verbs, as we see in perfectives built from the verb *бежать/bežat'* 'run' like *прибежать/pri-bežat'* 'run to', *убежать/u-bežat'* 'run away', *вбежать/v-bežat'* 'run into', *выбежать/vy-bežat'* 'run out of'. However, as we show in chapter 2, all meanings of a prefix are related to the prototypical meanings and the meanings present in Natural Perfectives are the same as (or a subset of) those observed with Specialized (and Complex Act) Perfectives. The shape an object takes in space is thus paralleled by the spatio-temporal contours of an event.<sup>9</sup>

Nouns in Yucatec Maya are sorted into groups by their classifiers. There are nouns like *kib'* 'wax' that are associated with the *tz'iit* 'long-thin' classifier, others that are associated with the *wáal* 'flat' classifier, and other groups of nouns are associated with other classifiers. Figure 1 in chapter 1 shows how Russian prefixes divide the simplex verbs into groups when forming Natural Perfectives. All simplex verbs that can form Natural Perfectives are sorted according to the prefixes they use. McGregor (2002: 16–22) and Gerner (2009: 708) specify what kind of distribution qualifies as a classifying system, so we can check whether the Russian prefixes should be recognized as a classifying system for both nouns and verbs. McGregor and Gerner give a four-

<sup>7</sup> Shape is considered the most common parameter conveyed by numeral classifiers cross-linguistically. Animacy is also common, but can be thought of as a type of shape (a body with legs). Some classifier languages use functional parameters such as edibility. See Aikhenvald 2000: 98 and Lyons 1977: 465–66.

<sup>8</sup> Recognition of Russian verbal prefixes as primarily spatial is uncontroversial, largely because most of them are transparently related to prepositions with spatial meanings.

<sup>9</sup> McGregor (2002: 29) calls path "vectorial configuration" and identifies it as the most important parameter for verb classifiers, along with aspect and valency. He also states that "[v]ectorial configuration is the verbal analogue of shape in nominal classification systems."

part definition of classification (presented in italics below), and we can evaluate how Russian measures up if we assume that classifiers are prefixes and classifieds are verbs.

- (i) *There are a finite number of ways in which classifiers and classifieds can cooccur.* For Russian, the prefixes and verbs cooccur in pre-fixed verbs which can be Natural Perfectives, Specialized Perfectives, and Complex Act Perfectives. Classification is particularly relevant with respect to the Natural Perfectives.
- (ii) *The group of classifiers has more than one element.* This is clearly true, since Russian has sixteen prefixes.
- (iii) *The group of classifieds has significantly more elements than the group of classifiers.* True again for Russian: there are 1,429 verbs that are classified by the sixteen prefixes.
- (iv) *At least two of the groups of classifieds that are associated with two different classifiers must be significantly different from each other.* Chapters 2 and 3 prove in detail that each prefix is associated with a different group of verbs. For example, verbs that use the prefix *raz-* to form their Natural Perfectives refer to something coming apart, spreading, or being excited, whereas verbs that form Natural Perfectives with *pro-* describe progress through space or time or thoroughness. Note that this definition does not require that the groups are perfectly separated (non-overlapping), only that they are significantly different (non-identical).

Thus Russian prefixes pass all four tests for classifiers. McGregor (2002: 17) makes an additional requirement that the members of a set of classifiers “must show different behaviors.” All five case studies in this book give evidence that the prefixes behave differently. In chapter 2 we see that each of the “small” prefixes is associated with a specific semantic group of verbs. Chapter 3 shows that each of the “big” prefixes has a specific semantic profile. Chapter 4 shows that the prefixes *na-*, *za-*, and *po-* behave differently in terms of the grammatical constructions they appear in. Chapter 5 shows that prefixes can contrast even when they are associated with the same verbs. And in chapter 6 we see that some prefixes are more likely to motivate the formation of secondary imperfectives than others.

We see in Yucatec Maya that some nouns can take more than one classifier, although most nouns have one classifier that they are most associated with. We explored this issue for Russian verbs in our presentation of prefix variation in chapter 5. 1,043 simplex verbs use only one prefix to form a Natural Perfective, but 386 verbs can use between two and six prefixes for this function.

While many objects can be shaped from wax, the default wax object is a long thin candle, and this motivates the use of the *tz'it* 'long-thin' classifier with the noun *kib'* 'wax' in Yucatec Maya. Russian prefixes also overlap in meaning with the default event that can be achieved using the action of the simplex verb. There are many types of events that could involve tying, but tying something together (so that it is tied up) is the default event, and this motivates the use of the prefix *s-*, which has a TOGETHER meaning, in the Natural Perfective *связать/s-vjazat'* 'tie'. Likewise the prefix *raz-* has a SPREAD meaning that is compatible with the event described by *разветвиться/raz-vetvit'sja* 'branch out', *pri-* has an ATTACH meaning that is compatible with the event described by *прилипнуть/pri-lipnutt'* 'stick', and *vz-* has the meaning MOVE UPWARD that is compatible with the event described by *вскочить/vz-karabkat'sja* 'climb up'. And there are hundreds more such examples in chapters 2 and 3.

Aikhenvald (2000: 98) tells us that in numeral classifier systems it is common that there is one classifier that is generic in that it can combine with many more nouns than any other classifier; in some languages a generic classifier can combine with all nouns. There is also a parallel here to Russian prefixes in that the prefix *po-* is much more frequent than any other and is on its way toward becoming a generic classifier for the Russian verb system.<sup>10</sup>

Overall, the behavior of Russian prefixes in forming Natural Perfectives is remarkably parallel to the behavior of classifiers in forming numeral phrases in Yucatec Maya, as summarized in Table 2. The case of Russian is also consistent with existing descriptions of verb classifier systems. For this reason we suggest that Russian should be considered a verb classifier language and that the Russian prefixes be considered an aspectual classifier system.

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<sup>10</sup> Dickey (2007) states that *po-* is in the process of becoming a nearly universal perfectivizer for Russian verbs.

**Table 2.** Comparison of Numeral Classifiers in Yucatec Maya with Aspectual Prefixes in Russian

Numeral Classifiers in Yucatec Maya	Aspectual Prefixes in Russian
<ul style="list-style-type: none"> <li>• unmodified nouns refer to unformed substances</li> <li>• nouns modified by classifiers refer to discrete objects</li> <li>• classifiers associated with quantification by numerals</li> <li>• classifiers describe shape of object</li> <li>• classifiers sort the nouns into groups</li> <li>• some nouns can have more than one classifier</li> <li>• meaning of classifiers overlaps with default type of object</li> </ul>	<ul style="list-style-type: none"> <li>• unmodified imperfective verbs refer to unbounded states and activities</li> <li>• verbs modified by prefixes refer to discrete events</li> <li>• prefixes associated with quantification by perfective aspect</li> <li>• prefixes describe shape of action</li> <li>• prefixes sort the verbs into groups</li> <li>• some verbs can have more than one prefix</li> <li>• meaning of prefixes overlaps with default type of event</li> </ul>

While the main focus of this book is on the use of prefixes to form Natural Perfectives, the Verb Classifier Hypothesis is compatible with the use of prefixes to form other perfectives as well. Recall from Table 1 that in Yucatec Maya many nouns like *há'as* 'banana' can combine with a variety of numeral classifiers. In addition to *tz'iit* 'long-thin', which is used to identify the most typical banana-object, namely the fruit, other classifiers are used to identify other banana-objects, such as a banana leaf, a banana tree, etc. In terms of Russian verbs and prefixes, we can think of the verb *nucamЬ/pisat'* 'write' as filling the role analogous to *há'as* 'banana' and the prefix *na-* 'SURFACE, ACCUMULATE' as filling the role analogous to *tz'iit* 'long-thin' since the Natural Perfective *hanucamЬ/na-pisat'* 'write' describes the most typical writing event. Other prefixes are used to form Specialized Perfectives, such as *sanucamЬ/za-pisat'* 'record' and *nepenucamЬ/pere-pisat'* 're-write', and these are analogous to the use of the classifiers *wáal* 'flat' and *kúul*

'planted' to refer to the banana leaf and the banana tree. All of these are examples of what are called "sortal" classifiers, since they sort objects according to some feature (in this case shape). In the last line of Table 1 we see the example '*un-kúuch há'as* [one load banana] 'one bunch of bananas' which identifies not a type of object but rather a measure of a mass; *kúuch* 'load' is thus by contrast a "mensural" classifier. The Russian analog for mensural classifiers is the use of prefixes to form Complex Act Perfectives such as *nonucamъ/po-pisat'* 'write for a while'.<sup>11</sup>

#### **7.4. Verb Classifiers against the Backdrop of Noun-Verb Comparisons**

The argument that Russian verbal prefixes are verb classifiers rests on a parallel between numeral classifiers and verb classifiers, which can be stated more abstractly as a parallel between nouns and verbs. In drawing such a parallel, we are assuming that it is meaningful to make comparisons across these two word classes. But are nouns and verbs really comparable? We will address this question both abstractly and with specific reference to Russian.

Dahl (1985: 76) notes that the analogy between count vs. mass nouns on the one hand and perfective vs. imperfective verbs on the other "has often been pointed out" (see a list of relevant references in Janda 2004). Langacker (2008: 128, 151–52) remarks that despite their maximal opposition as word classes, the major division for each of them "has the same conceptual basis: the count/mass distinction for nouns is precisely analogous to the perfective/imperfective distinction for verbs. In both cases, the distinction involves the interrelated factors of bounding, homogeneity, contractibility, and replicability." Talmy (2000: 43–96) in his discussion of what types of distinctions do and do not get represented in grammar devotes over 50 pages to the "homologies between the linguistic structuring of space and of time," where he shows again and again that matter in space, represented by nouns, has many parallels to action in time, represented by verbs.

Some of the parallels between count vs. mass and perfective vs. imperfective specific to Russian have already been addressed in 7.3. In

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<sup>11</sup> We owe the insight of the analogy between Russian Natural and Specialized Perfectives vs. Complex Act Perfectives and sortal vs. mensural classifiers to Stephen M. Dickey. This analogy is explored in more detail in Dickey and Janda forthcoming.

addition we can see a number of parallels in the use of Russian morphemes (prepositions, prefixes, suffixes) in nouns and verbs, as listed in Table 3, where the first row presents items that are similar in both form and function and the other two rows present items that are similar in function only.<sup>12</sup>

**Table 3.** Parallel Uses of Morphemes with Russian Nouns and Verbs

Nouns	Verbs
Collocation with prepositions: <i>по, с, за, про, о(б), на, из, у, от, при, под, в, etc.</i>	Collocation with prefixes: <i>по-, с-, за-, про-, о(б)-, на-, из-, у-, от-, при-, под-, в-, etc.</i>
Singulative formed by suffixation: <i>-ин(к)-а</i> ( <i>виноград</i> 'grapes' > <i>виноградина</i> 'grape', <i>песок</i> 'sand' > <i>песчинка</i> 'grain of sand')	Single Act Perfectives formed by affixation: suffix <i>-ну</i> ( <i>чихать</i> 'sneeze' > <i>чихнуть</i> 'sneeze once'); prefix <i>с-</i> ( <i>глупить</i> 'act stupid' > <i>сглупить</i> 'do one stupid thing')
Collectives formed by suffixation: <i>-ств-о, -в-е, -няк, -ник, -тв-а, -ур-а, -н-я</i> ( <i>учителъ</i> 'teacher' > <i>учительство</i> 'teachers', <i>зверь</i> 'wild beast' > <i>зверье</i> 'wild beasts')	Habituals formed by suffixation: <i>-ы/ива-</i> ( <i>говорить</i> 'talk, say' > <i>говаривать</i> 'talk, say habitually', <i>сидеть</i> 'sit' > <i>сиживать</i> 'sit habitually')

Twelve of the sixteen prefixes that form Natural Perfectives are represented by etymologically related prepositions with which they share both form and meaning.<sup>13</sup> There are, of course, some prefixes that do not have equivalents among the prepositions, and many more prepositions that do not exist as prefixes. However, the isomorphism that does exist is extensive and striking.

<sup>12</sup> Cf. Janda (2004) and Plungjan (2011: 221).

<sup>13</sup> Note that there used to be a corresponding preposition for *в(о)б-*. Old Church Slavonic had a preposition *vbz*, also attested in Old Czech as *wz*, and this preposition survives in Serbian as *uz* (Endresen and Plungian 2011: 31–32).

Both nouns and verbs can use suffixes to signal focus on a single item, be it a single particle of a mass, as in *песчинка* 'grain of sand', or an event that is a single cycle plucked out of a chain of repeatable actions, as in *чихнуть* 'sneeze once'. The opposite kind of process is also possible, making collectives out of individuals, where *учительство* refers to a collection of teachers, and *говариваютъ* refers to a collection of speaking events.

Diminutives are regularly formed from nouns as in *книга* 'book' > *книжка* 'little book'. Although such formations are rare among verbs in Russian, we do find attestations of the verbs *байнъкать* 'sleep' and *кушанъкать* 'eat' in Google, and note that they are formed with the same -*к* suffix as the nouns. Furthermore, note the related words *байнъки* and *кушанъки* which straddle the divide between nouns and verbs. Sometimes they behave like nouns: they can be modified by adjectives (*вкусные кушанъки* 'tasty things to eat') and occupy the position of direct object (*он возит кушанъки* 'he delivers things to eat'). But sometimes they behave like verbs: they can combine with the auxiliary verb in the future (*будем кушанъки* 'we are going to eat') and take direct objects (*кушанъки круассанчики* 'eat croissants').<sup>14</sup>

Bailyn (2012: 36–59) notes a number of syntactic parallels between nouns and verbs in Russian. For example, he asserts that VPs and NPs are similar in terms of constituency, that nouns and verbs can both take complements, and that both VP and NP have one unique complement position. Furthermore he proposes an NP-shell parallel to the VP-shell analysis in order to account for the possible double adnominal genitive construction in Russian (*коллекция редких монет профессора* 'the professor's collection of rare coins'), and this proposal also accounts for certain types of complex government by nouns (as in *посказ Ивана о себе* 'Ivan's story about himself').

Given these parallels between nouns and verbs, it is reasonable to ask whether numeral classifier systems and verb classifier systems tend to be found in the same languages or not. Although there is less information available about verb classifiers than about numeral classifiers, it seems that the two types of systems can appear independently of each other and all possible combinations of numeral classifier and verb classifier systems are attested, as indicated in Table 4.

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<sup>14</sup> For more data and details, see Makarova 2012. These examples are extremely colloquial, on the periphery of grammaticality for most speakers of Russian.

**Table 4.** Attested Possible Combinations of Numeral Classifier and Verb Classifier Systems

Verb Classifiers	Numeral classifiers	
	+ : languages with numeral classifiers	- : languages without numeral classifiers
+ : languages with verb classifiers	<b>Mandarin Chinese</b> + numeral classifiers + verb classifiers	<b>Russian</b> – numeral classifiers + verb classifiers
– : languages without verb classifiers	<b>Yucatec Maya</b> + numeral classifiers – verb classifiers	<b>English</b> – numeral classifiers – verb classifiers

Table 4 refers only to systematic grammaticalized use of classifiers in languages. English is not considered to have either type of classifier system, although there are some classifier-like uses: for example, the use of *head* in expressions like *ten head of cattle* which is similar to a numeral classifier, but marginal in English grammar; and the verb particles in phrases like *clean up, spread out* function in some ways that are similar to Russian verbal prefixes, but are not grammaticalized to the same degree as aspectual markers. Mandarin Chinese, by contrast, has both types of classifiers, with over 100 numeral classifiers (Gao and Malt 2009) and approximately fifty verb classifiers (McGregor 2002: 294). As we have seen, Yucatec Maya has numeral classifiers, but there is no evidence of a verb classifier system in that language. We are arguing that Russian has verb classifiers, but lacks numeral classifiers (though there is some classifier-like usage like *штука* ‘piece, unit’ as in *Прислать десять штук собак в лабораторию номер шесть* ‘Send forty dogs [forty units of dog] to laboratory number 6’<sup>15</sup>). This combination found in Russian is precisely the one attested by McGregor (2002), who presents many cases of verb classifier systems among Australian languages that lack numeral classifier systems, such as Gooniyandi, Wagiman, and the Jaminjungan languages, and this combination is also found in Hindi-Urdu.

<sup>15</sup> [Ю. О. Домбровский. Обезьяна приходит за своим черепом, часть 1 (1943–58)]

### 7.5. Summary of Russian Prefixes as Verb Classifiers

In short, the proposal that Russian has verb classifier systems is consistent with what we know about nouns and verbs, the parallels that we find between the two word classes, and the typological relationship between numeral classifier systems and verb classifier systems.

The proposal that Russian prefixes are verb classifiers is a dramatic departure from the traditional interpretation according to which the prefixes are semantically empty markers of perfective aspect. Chapters 2–6 give us ample evidence to reject the Empty Prefix Hypothesis, but why has Russian not been recognized as a verb classifier language before and what do we gain by accepting this proposal?

One cannot find something without knowing what to look for. Linguists have only recently become aware of verb classifier systems, and have looked for them primarily among exotic languages. The answer is thus simply that this fact has been overlooked. McGregor (2002: 404) states in his conclusion that verb classification “has not yet been incorporated into mainstream linguistic knowledge as a category that might be expected in a language,” but that it is “a far from exotic phenomenon.” He continues to claim that “[d]oubtless it is not confined to the relatively few languages in which it has been hitherto described, though the extent of its distribution across the world’s languages remains to be charted.” This book is the first publication to make a comprehensive case for considering Russian prefixes to be verb classifiers. Russian is not an exotic or endangered language and thus supports McGregor’s claim that verb classifiers are not a rare phenomenon.

There are numerous advantages to accepting this proposal. If Russian perfectivizing prefixes are verb classifiers, we gain a typological perspective on the Empty Prefix vs. Overlap Hypothesis. As we see in Lucy’s story about numeral classifier systems, classifiers were at one point considered to be semantically empty, purely formal markers for nouns. Now, however, the fact that numeral classifiers have meanings is uncontroversial. By embracing the proposal that prefixes are aspectual classifiers, we gain cross-linguistic support for the Overlap Hypothesis. In addition, we know that numeral classifier systems have a meaningful purpose since they convert amorphous substance into discrete events. This gives us an important insight into the Russian as-

pectual classifier system: its purpose is to convert amorphous states and activities into discrete events.

Recognition of Russian prefixes as aspectual classifiers gives linguists the opportunity to make meaningful typological comparisons between Russian and other languages. We also gain a more meaningful description of Russian, according to which there are clear semantic motives for the choice of one prefix over another and for the entire system of aspectual prefixation.



## CHAPTER 8

## Conclusion

This book presents a variety of evidence in support of two hypotheses: the Overlap Hypothesis, according to which the meanings of the prefixes in Natural Perfectives are systematically matched with the meanings of simplex verbs, and the Verb Classifier Hypothesis, according to which the Russian verbal prefixes should be understood as verb classifiers. In this chapter we summarize our findings and we present some linguistic and pedagogical implications.

This book focuses exclusively on the behavior of prefixes in Natural Perfectives in Russian; in other words, on prefixed perfectives that share the same lexical meaning as the corresponding imperfective simplex verb. The main objective of this book is to test two contrasting hypotheses: the Empty Prefix Hypothesis, according to which the prefix makes no contribution to the meaning of the Natural Perfective vs. the Overlap Hypothesis, according to which the meaning of the prefix overlaps with the meaning of the simplex verb and as a result only seems to be absent.

Chapter 1 presents a series of thought experiments comparing the predictions of the Empty Prefix Hypothesis with basic facts of Russian aspect. Given the Empty Prefix Hypothesis, one would expect there to be only one zero-valued perfectivizing prefix, but in fact there are sixteen. If we ignore this problem, and assume that the sixteen prefixes have the same zero value, then simplex verbs should be randomly assigned to prefixes in roughly equal numbers, but in fact different prefixes combine with very different numbers of simplex verbs. Furthermore, if the prefixes are empty, we should not expect any single simplex verb to combine with more than one such empty prefix, but in fact a substantial number of Russian simplex verbs combine with two or more prefixes to form Natural Perfectives. Finally, there is the fact that all sixteen supposedly empty prefixes actually express meaning in combination with other simplex verbs. However, overlapping meanings, on the other hand, are robustly attested in language and therefore less controversial.

None of the arguments in chapter 1 are new and all of these arguments support the Overlap Hypothesis, yet both Russian linguistics and Russian language pedagogy continue to refer to “empty” prefixes. Why is that? Because mere argumentation at the level of overall generalizations does not provide sufficient compelling evidence to reject the Empty Prefix Hypothesis. Chapters 2–6 present such evidence in terms of statistical studies of distributions in the Exploring Emptiness database and the Russian National Corpus. Each study focuses on a testable pair of corollaries of the two hypotheses. In each pair of corollaries the one that derives from the Empty Prefix Hypothesis serves as a kind of “null hypothesis” according to which we expect to find no significant patterns. The corresponding corollary that derives from the Overlap Hypothesis, on the contrary, predicts systematic patterns. Collectively these five studies take the debate about the Empty Prefix vs. Overlap Hypotheses to a new level, going beyond mere polemics and engaging instead in comprehensive quantitative analyses.

We divide the sixteen prefixes into two groups, mostly on the basis of the number of simplex verbs they combine with. This yields a group of eleven “small” prefixes that combine with relatively fewer simplex verbs (*v-*, *pod-*, *pere-*, *pri-*, *ot-*, *v(o)z-*, *u-*, *iz-*, *raz-*, *vy-*, *o(b)-*), and a group of five “big” prefixes that combine with larger numbers of simplex verbs (*pro-*, *na-* *za-*, *s-*, *po-*). We then apply two different strategies for comparing the meanings of the prefixes and the meanings of the simplex verbs. We treat the meanings of prefixes as coherent networks of related meanings rather than as abstract invariants. These networks, known as radial categories, give us enough detail about the structure of the meanings to facilitate comparison across prefixes and simplex verbs.

In chapter 2 we establish the meanings of the “small” prefixes on the basis of the verbs in which these prefixes are uncontroversially recognized as expressing meaning: Specialized Perfectives and Complex Act Perfectives. These two types of perfectives are extracted from the Russian National Corpus for all eleven “small” prefixes and radial categories are built to represent their meanings, each containing a prototypical meaning and its extensions. This gives us a source for the meanings of the prefixes that is independent from their use in Natural Perfectives, and this source is further verified against previous studies performed by scholars. We then use radial category profiling to compare the meanings of the prefixes with the meanings of the simplex

verbs that use those prefixes to form Natural Perfectives. All eleven examples of radial category profiling show that the meanings of the simplex verbs overlap partially or entirely with the radial categories of the prefixes. This observation can be stated conversely: each prefix selects the simplex verbs that conform best to the meanings in its radial category.

Chapter 3 applies a semantic profiling analysis to the five “big” prefixes by examining Natural Perfectives that have been independently assigned semantic tags in the Russian National Corpus. A chi-square test shows that the distribution of prefixes across semantic tags of verbs is highly significant and there is also a large effect size. In other words, each prefix has a unique semantic profile in terms of the semantic tags it is associated with. We use the Fisher Test to measure the attractions and repulsions between semantic tags and prefixes and then compare the meanings of the prefixes in terms of semantic tags (again verified against the analyses of previous scholars) with the meanings of the simplex verbs they combine with. As in chapter 2, all five prefixes show either partial or complete overlap between the meanings of the prefixes and the meanings of the simplex verbs that use those prefixes to form Natural Perfectives. Indeed, the meanings of the verbs are quite consistent, even among verbs with semantic tags that are repulsed from a given prefix. This study gives further evidence that each prefix seeks out the verbs that match its meaning best.

In chapter 4 we use constructional profiling to examine differences in the behaviors of prefixes. The assumption here is that differences in the frequency distribution of grammatical constructions in which a word appears are associated with differences in meaning. This study focuses on the verb *гружить/gruzit'* ‘load’ and its three Natural Perfectives prefixed in *na-*, *za-*, and *po-*, all of which can appear in both the theme-object construction (*гружить/gruzit'* *ящики на телегу* ‘load the boxes onto the cart’) and the goal-object construction (*гружить/gruzit'* *телегу ящиками* ‘load the cart with boxes’). If the meanings of the Natural Perfectives were identical, as predicted by the Empty Prefix Hypothesis, there should be no difference in how the prefixed verbs are distributed across the two constructions. However, a logistic regression model shows that the prefixes are distributed differently, and the effect is significant even when we take into account other factors such as the use of active vs. passive and full vs. reduced versions of the constructions. There are additional differences across the three

prefixes as well, including the distribution of metaphorical uses and uses with prepositions. Each of the three prefixed Natural Perfectives has a unique constructional profile that corresponds to the meaning of the prefix. *Na-* prefers the goal-object construction and construes the vehicle as a SURFACE on which the load ACCUMULATES. The more extensive complex of meanings associated with *za-* (including ATTACH, FILL, COVER, and CHANGE TO A FIXED STATE) supports use of both constructions, whereas the SOME meaning of *po-* gives it a strong preference for the theme-object construction.

Chapter 5 is an in-depth study of one of the issues raised by the thought experiments in chapter 1, namely the expectation that if the prefixes are empty, no simplex verb should use more than one prefix to form Natural Perfectives. However, we find that such use of multiple prefixes, which we call prefix variation, is a robust and systematic phenomenon. 27% of simplex verbs form two or more Natural Perfectives, and all sixteen prefixes are involved in prefix variation. Prefix variation is motivated by the interaction of the meanings of prefixes and simplex verbs. Prefix variation takes advantage of the opportunity that prefixes provide for expressing different meanings. Sometimes this results in sharp contrasts among Natural Perfectives, as in *зачинить/za-činit'* белье 'mend underwear' vs. *очинить/o-činit'* карандаши 'sharpen a pencil (from all sides)', but often we see only fine-grained differences. An example of a subtle difference is *заязнутъ/za-vjaznut'* and *уязнутъ/u-vjaznut'*, both of which are Natural Perfectives meaning 'get stuck' and are in many contexts interchangeable, but the former refers to getting caught on something, whereas the latter involves sinking down into something. Simplex verbs that engage in prefix variation can overlap in meaning with more than one prefix and often there are clusters of similar verbs that then share the same combination of prefixes. In other cases different prefixes can overlap with different parts of the meaning of a simplex verb and thus provide subtle contrasts. Rare and non-existent prefix combinations involve prefixes with incompatible meanings.

Given the Empty Prefix Hypothesis, aspectual triplets such as *множитъся/množit'sja* (simplex imperfective), *умножитъся/u-množit'sja* (prefixed Natural Perfective), *умножатъся/u-množat'sja* (secondary imperfective, with the suffix *-a*) 'multiply' should not exist. If the prefix brings no meaning to the Natural Perfective, there is no reason to create a secondary imperfective to compete with the simplex verb.

Chapter 6 presents evidence that aspectual triplets are robustly attested in Russian and that their behavior is motivated by the meanings of the prefixes. Depending upon the source consulted, between 37% (Russian National Corpus) and 77% (Google) of Natural Perfectives have derived secondary imperfectives. While many such secondary imperfectives are rare, some are fairly common and some are even more common than the corresponding simplex verbs. Prefixal meanings that indicate intentional actions focused on results such as CHANGE TO A FIXED STATE (for *za-*), CONTROL (for *u-*), COVER (for *za-*), and IMPOSE A NEW FEATURE (for *o-*) support the formation of secondary imperfectives. Prefixal meanings that indicate spontaneous actions such as EMPTY A CONTAINER (for *vy-*) and DISSOLVE (for *raz-*) give less support for the formation of secondary imperfectives.

In sum, five separate studies show robust effects that should be absent if the prefixes in Natural Perfectives are semantically empty. In every study, the observed behavior is consistent with what we know about the meanings of the prefixes in their “non-empty” uses. This is the most comprehensive account of the meaning-related behavior of Russian prefixes to date, and it is unlikely to be surpassed unless someone invents a “semantometer” that can be held up to prefixes to detect their meanings the way that a Geiger counter can be held up to a lump of uranium to detect its radioactivity. But we already have plenty of evidence, without waiting around for a science-fiction fantasy like a “semantometer.” It is time to retire the Empty Prefix Hypothesis once and for all.

Chapter 7 advances a new hypothesis that subsumes and motivates the Overlap Hypothesis, namely the Verb Classifier Hypothesis. The Verb Classifier Hypothesis suggests an analogy between numeral classifier systems and the use of Russian prefixes. Numeral classifiers are known to exist in many languages of the world, primarily in Asia and South America. The job of numeral classifiers is to sort objects according to some feature (often shape) in the presence of quantification. If we substitute numeral classifiers with verbal prefixes, objects with events and quantification with perfective aspect (often described as a type of quantification), we can restate the relationship as it appears in Russian: the job of verbal prefixes is to sort events according to some feature (meaning) in the presence of perfective aspect. In other words, Russian prefixes are in effect a verb classifier system similar to those proposed for Mandarin Chinese, Hindi-Urdu, and a number of Aus-

tralian languages (McGregor 2002), and this hypothesis facilitates cross-linguistic comparisons. This analogy is situated in a broader discussion of parallels between nouns and verbs in Russian.

The description of Russian prefixes as a verb classifier system furthermore has pedagogical value since we can redesign our curricula to teach students the system according to its meaningful groupings rather than simply requiring them to memorize 1,981 combinations of prefixes with simplex verbs. We envision a new generation of textbooks of Russian that organize the presentation of verbs according to the meanings of prefixes and verb stems. For each meaning, the Specialized Perfectives (and Complex Act or Single Act Perfectives where applicable) are presented in order to orient students to the relevant meanings, and there is an accompanying presentation of Natural Perfectives with the same meaning. Materials for more advanced learners could guide them through the distinctions made among Natural Perfectives via prefix variation and explain the use of secondary imperfectives of Natural Perfectives, with emphasis on those triplets where the secondary imperfective competes strongly with or predominates over the simplex imperfective.

In short, the proposal to recognize Russian prefixes as verb classifiers supports the community of people interested in Russian grammar to be better linguists, better instructors, and better learners.

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