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# Russian neologism verb's prefixes: Against the semantic invariants approach

In this paper, the hypothesis of semantic invariants, which claims that the selection of natural telicizer prefixes depends on the semantics of the verb, is refuted based on verbs derived from English loanwords. The data from neologism verbs, collected through a Google Forms survey, demonstrate the existence of a universal natural telicizer prefix *za-*, the frequency of which depends on the respondents' familiarity with the context, something that cannot be explained within the semantic invariants approach. The paper provides an analysis of the selection of natural telicizer prefixes within the scalar approach, which offers a much better account of the data.

**Key words:** slavic prefixes, aspect, aktionsart, telicity, semantic invariants, scales, verb classifiers, neologisms

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# Приставки русских глагольных неологизмов: против гипотезы о семантических инвариантах

В данной работе на глаголах, образованных от английских заимствований, опровергается гипотеза о семантических инвариантах, утверждающая, что выбор чистовидовой приставки зависит от семантики глагола. Данные глаголов-неологизмов, собранные в ходе опроса в Google.Forms, показывают наличие универсальной чистовидовой приставки *за-*, частотность которой зависит от знакомства респондентов с контекстом, что невозможно объяснить в рамках подхода семантических инвариантов. В работе приводится анализ выбора чистовидовых приставок в рамках подхода шкал, который позволяет гораздо лучше объяснять данные.

**Ключевые слова:** славянские приставки, аспект, акциональность, предельность, семантические инварианты, шкалы, глагольные классификаторы, неологизмы

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## 1. Introduction

In this paper, I describe the productive part of the Russian aspectual verbal morphology system using neologisms formed from English loanwords as examples. The paper examines the selection of natural telicer verbal prefixes with a view to testify on neologisms two theories proposed in the literature to explain this selection. I demonstrate that the semantic

invariants approach does not provide an appropriate account and reanalyze the morphology of neologisms within the scalar framework, which is much more viable approach against my data.

The investigation of neologisms allows us to discard idiosyncrasies of aspectual derivation inherent to native lexicon, which, if subject to explanation, would be sufficiently specific, and to identify the systematic features of aspectual word formation that are productive in the contemporary language.

By natural telicer prefixes, I mean prefixes that form the telic perfective form from the imperfective one for aspectual pairs of verbs determined by Maslov's criterion [Maslov, 1948]:

(1) **Maslov's criterion**
An imperfective verb forms an aspectual pair with a perfective verb if the former can replace the latter in contexts that require obligatory imperfectivization, such as in narrative and habitual contexts.

Atelic forms are of no particular interest in terms of prefix selection since they are always formed using the delimitative prefix *po-*.[1]

What then determines the choice of a natural telicizer prefix in each individual case? Why does *s-* in (2) form an aspectual pair, while in (3) it does not?

(2) a. Ja **je-m** kašu.
I **eat**-1SG.PRES[2] porridge
'I am **eating** the porridge.'

b. Ja **s-je-l** kašu.
I COMP-**eat**-PAST.SG.M porridge
'I **ate** the porridge.'

(3) a. Ja **pj-u** moloko.
I **drink**-1SG.PRES milk
'I am **drinking** the milk.'

b. Ja ***s-pi-l** moloko.
I COMP-**drink**-PAST.SG.M milk
'I **drank** the milk.'

[1] Albeit it warrants further examination regarding the conditions under which a verb permits this form (for a detailed Aktionsart classification see [Tatevosov, 2016]), and the potential unification of this prefix with the natural telicizer *po-* [Filip, 2000; Kagan, 2015; Zinova, 2021].

[2] Glossary: 1SG – first singular; 3SG – third singular; COMP – completive; F – feminine; IMPF – imperfective aspect; INF – infinitive; M – masculine; PAST – past tense; PRES – present tense; SG – singular; TV – thematic vowel.

There are several possible answers to this question in the aspectological literature. The first one is agnosticism regarding prefix selection. Natural telicizers are semantically empty and serve only to create a perfective form [Vinogradov, 1947; Avilova, 1959, 1976; Shvedova, 1980; Apresyan, 1986]. The second one is to search for semantic invariants [Krongauz, 1994, 2001; Gorelik, 2001; Mellina, 2001; Plungian, 2001; Dobrushina, 2010]. Among these studies, the works of Janda [Janda, 2007, 2012; Janda et al., 2013] are particularly noteworthy due to their comprehensive statistical analysis. The third, syntactic approaches pay most of their attention to the structural position of aspectual prefixes and their similarity with prepositions [Ramchand, Svenonius, 2002; Romanova, 2004; Svenonius, 2004a, 2004b; Ramchand, 2008; Tatevosov, 2010]. Lastly, the scalar approach focuses not on the lexical semantics of the verbs themselves but rather on the scales they introduce. This framework originates from [Filip, 1999] and is further developed in [Filip, 2000, 2003, 2008; Filip, Rothstein, 2005; Kagan, 2011, 2012, 2013, 2015; Zinova, 2021].

The first approach is not very informative as it simply ignores the problem of prefix selection. As shown in [Pazelskaya, Tatevosov, 2008; Tatevosov, 2008b, 2009], natural telicizers, such as *na-* in *napisat'* 'to write completely', turn an atelic predicate into a telic one, i.e., they specify the resultant state, without actually affecting the grammatical aspect (perfectivity or imperfectivity), which also refutes the first approach.

In what follows, I examine the semantic invariant and scalar approaches in greater detail. First, in Section 2, I outline the semantic invariants approach and test it using neologism data. Then, in Section 3, I demonstrate how the data on neologisms can be explained via the scalar approach. As for the syntactic approach, I put its discussion out of the scope of this paper. Nevertheless, I believe that the integrating the scalar and syntactic approaches may be more effective in terms of predictability and explanatory power than relying solely on the scalar approach. The most notable works within the syntactic scalar approach include [Pantcheva, 2011, 2012; Tolskaya, 2014, 2018a, 2018b].

## 2. Semantic approaches

In this section we consider the semantic invariants approach, especially in the version of [Janda, 2007, 2012; Janda et al., 2013]. Proposal by Janda et al. is that Russian natural telicizer prefixes function as a type of verb classifiers. Janda et al. compare them to numeral classifiers, which are common in South American and Southeast Asian languages. For example, in the Yucatec language (of the Mayan family), if we want to talk about

a quantified, individuated candle, we must use the word *kib*', which by itself means 'wax' and cannot be used with numerals, along with the classifier *tz*'*íit* 'long'. Similarly, according to Janda et al., Russian imperfective verbs denote some formless actions that must be perfectivized (telicized) in order to be counted. In this section, I will analyze the data provided by Janda et al. without revisiting their theoretical framework, as it is not pivotal to my critique of semantic invariants approaches. We are concerned only with the hypothesis that the selection of the natural telicizer prefixes depends on the lexical semantics of the verb.

I present the data in Section 2.1. The experimental design for the morphology of neologisms, achieved through the same methodology, will be detailed in Section 2.2. Finally, my data, along with a comparison to findings by Janda et al., will be discussed in Section 2.3.

## 2.1. Distribution of prefixes

Janda et al. conducted the most comprehensive empirical research on the distribution of natural telicizers, which was processed at the University of Tromsø. Tromsø's database is publicly available.[3] This database contains 1981 aspectual pairs, where each imperfective verb has been assigned one or several telic perfective counterparts through a process involving Russian dictionaries and the introspection of four linguists using Maslov's criterion. [Janda, 2007] refers to these *telic* counterparts as natural perfectives, but as was discussed in Section 1, they are not inherently related to perfectivity. Therefore, I will adopt the term natural telics instead.

All the verbs in Tromsø's database have been assigned semantic tags using the system introduced by the Russian National Corpus (RNC).[4] While Janda et al. do not describe the tags, I observed that they created several new ones. Since I have a limited understanding of their purpose, I will not discuss them except for two, which I will address in Section 2.2.

Janda et al. (2013) provide a statistical analysis of the data on the aspectual pairs, their natural telicizers, and their semantics. First of all, their distribution of the prefixes can be seen in Fig. 1. The most frequent natural telicizer prefix is *po*-, which is suggested by [Janda et al., 2013] to be default for Russian.

Janda et al. (2013) observe correlations between the semantic class(es) in which a verb falls and its natural telics. The *p*-values attained after applying

[3] URL: http://emptyprefixes.uit.no (date accessed: 23.08.2024).

[4] URL: https://ruscorpora.ru/page/instruction-semantic (date accessed: 23.08.2024).

Fisher's exact test for 5 frequent prefixes (*po-*, *s-*, *na-*, *za-* and *pro-*) and 4 frequent tags (IMPACT, CHANGEST, BEHAV and SOUND & SPEECH)[5] are shown in Table 1.[6] The attractions and repulsions between prefixes and semantic tags that are implied by the *p*-values are shown in Table 2 with the number of corresponding verbs (both tables are taken from http://emptyprefixes.uit.no/semantic_rus.htm). CHANGEST verbs tend to attract the prefix *po-*, BEHAV verbs attract the prefixes *na-* and *s-*, and IMPACT verbs attract both of these prefixes as well as the prefix *za-*. The SOUND & SPEECH class attracts the prefix *pro-*.

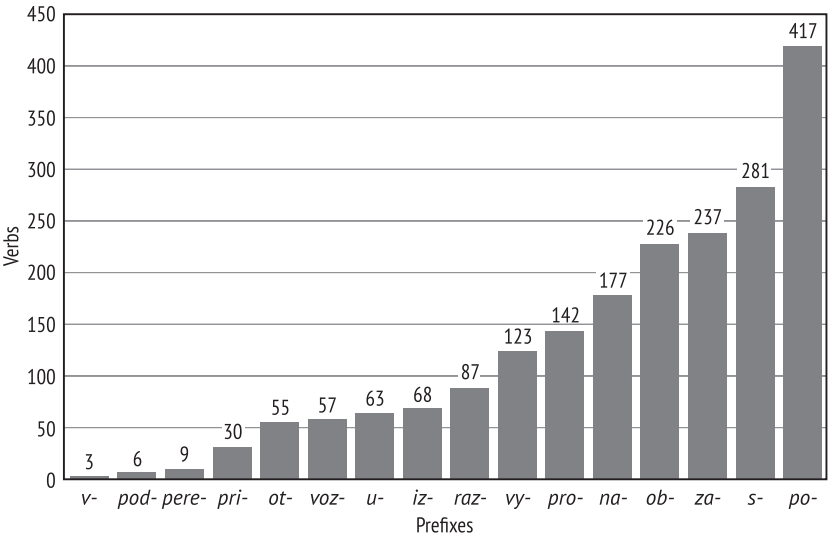


**Fig. 1.** Distribution of natural telicizer prefixes (by [Janda et al., 2013])

[5] According to the description provided by TRNC, IMPACT refers to physical interaction (e.g., *bit*' 'to beat', *kolot*' 'to prick', *vytirat*' 'to wipe'). CHANGEST indicates a change in state or property (e.g., *vzroslet*' 'to grow up', *bogatet*' 'to become rich', *rasširit*' 'to expand'). BEHAV represents human behavior (e.g., *kurolesit*' 'to carouse', *priveredničat*' 'to be picky'). SOUND describes sound (e.g., *gudet*' 'to hum', *šelestet*' 'to rustle'). SPEECH relates to speech (e.g., *govorit*' 'to speak', *sovetovat*' 'to advise', *sporit*' 'to argue').

[6] Janda et al. united the tags SOUND and SPEECH from TRNC since this unification is natural, given that speech is a subset of sound. Janda et al. also excluded verbs with multiple prefixes or multiple semantic tags, as these could compromise the assumption of independence when applying Fisher's exact test.

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*Table 1*

**Correlation between semantic tags and prefixes (by [Janda et al., 2013])**

| Semantic tag | *po-* | *s-* | *na-* | *za-* | *pro-* |
|---|---|---|---|---|---|
| IMPACT | [–] $4 \times 10^{-12}$ | [+] 0.33 | [+] 0.0003 | [+] $3.7 \times 10^{-11}$ | [–] 0.0009 |
| CHANGEST | [+] $6.3 \times 10^{-13}$ | [–] 0.03 | [–] $5.8 \times 10^{-6}$ | [+] 0.22 | [–] $6.3 \times 10^{-6}$ |
| BEHAV | [–] 0.052 | [+] $6.5 \times 10^{-7}$ | [+] 0.0006 | [–] 0.0001 | [–] $2.8 \times 10^{-5}$ |
| SOUND & SPEECH | [+] 0.23 | [–] 0.003 | [–] 0.005 | [–] $1.9 \times 10^{-10}$ | [+] $3 \times 10^{-21}$ |

The table is taken from http://emptyprefixes.uit.no/semantic_rus.htm

*Table 2*

**Attractions and repulsions between semantic tags and prefixes (by [Janda et al., 2013])**

| | *po-* | *s-* | *na-* | *za-* | *pro-* |
|---|---|---|---|---|---|
| **Attractions** | 62 CHANGEST verbs | 23 BEHAV verbs<br>23 IMPACT verbs | 31 IMPACT verbs<br>17 BEHAV verbs | 47 IMPACT verbs | 51 SOUND & SPEECH verbs |
| **Neutral** | 37 SOUND & SPEECH verbs<br>11 BEHAV | – | – | 22 CHANGEST verbs | – |
| **Repulsions** | 11 IMPACT verbs | 9 SPEECH verbs<br>11 CHANGEST verbs | 3 CHANGEST verbs<br>8 SPEECH verbs | 1 BEHAV verbs<br>1 SPEECH verb | 4 CHANGEST verbs<br>10 IMPACT verbs |

The table is taken from http://emptyprefixes.uit.no/semantic_rus.htm

## 2.2. My experiment

The goal of the experiment was to attain a dataset on the aspectology of neologisms similar to Tromsø's one. Neologisms were chosen as the subject of the research as they can provide insight into the productive system of the contemporary language as opposed to the native verbs, for which the selection of natural telicizers is much less predictable. Additionally, neologism verbs offer an opportunity to test the semantic invariant hypothesis on new data that has not yet been examined.

For these purposes, I conducted a questionnaire using Google Forms. There were four versions of the questionnaire, each including demographic questions about the respondent's age and whether they play computer games.[7] Following these, an example question was provided to illustrate the format of subsequent questions. The main section consisted of 12 language-related questions, all structured as stimulus-response sentence pairs, with nine of these being target questions. The questionnaire was completed by 96 respondents.

Before the questions, respondents were informed that they could suggest multiple answers to each question. The questions appeared as shown in (4). The task is translated into English here, and the two contexts are glossed and translated.

(4) Fill in the blank using a word with the same root as the bolded word:

a. Na etoj nedele Pet'a sozdajet novyj akkaunt,
on this week Petya creates new account
s nul'a jego **bustit** za neskol'ko dnej,
from scratch him **boost**.PRES.3SG in a.few days
a potom prodajet.
and then sells
'This week Petya creates a new account, **boosts** it from scratch in a few days, and then sells it.'

↓

[7] The question about playing computer games seemed crucial to me (as demonstrated in the next subsection) in my experiment, since a large portion of the verbs in the questionnaire were related to gaming, and the answers to this question indicated how familiar a respondent was with this lexicon. However, a more effective way to capture familiarity might be to ask about time spent on the Internet or using a computer, for example.

(4) b. Na etoj nedele Pet'a sozdal novyj akkaunt,
on this week Petya created new account
s nul'a jego _____ za neskol'ko dnej,
from scratch him COMP.**boost**.PAST.SG.M in a.few days
a potom prodal.
and then sold
'This week Petya created a new account, **boosted** it from scratch in a few days, and then sold it.'

The two contexts are related to each other as contexts for applying Maslov's criterion. The first context was narrative or habitual (requiring obligatory imperfectivization). The second context was assumed to be initial, presented as a sequence of actions, with the target verb being the second action. This arrangement was designed to make respondents understand that the omitted verb should be perfective. Moreover, the omitted predicate was to be telic (as I am looking for natural telic verbs). When the context alone did not make this clear, I added a PP of temporal extent, such as in two hours, which is possible only with telic predicates in Russian (as in English).

Firstly, I considered only those imperfective verbs for which I found prefixed telic pairs in corpora (I used Aranea and RNC). Many neologistic telic perfective verbs include the semelfactive suffix *-nu*. Although this suffix appears to be the default natural telicizer for most neologisms according to corpus data, it is structurally and semantically distinct from natural telicizer prefixes and thus falls outside the scope of this study.

Additionally, I avoided using first-person singular present forms with bolded verbs where it could lead to ambiguous palatalization. For example, *donaču* could be derived from either *donatit*' or *donačit*'. I believe this precaution would not affect the respondent's form creation capabilities but would make their task easier.

Some verbs, namely *majnit*' 'to mine (cryptocurrency)' and *farmit*' 'to farm (items in games)', by my introspection and corpus data, tend to have quantitative noun phrases as their direct object and, correspondingly, they have the prefix *na-* as their natural telicizer. Although cumulative *na-* is not a lexical prefix[8] in the sense described by [Babko-Malaya, 2003; Svenonius, 2004b; Romanova, 2004], my introspection, as well as responses from the subsequent section, indicate it passes Maslov's criterion. To avoid cumulative interpretations, I used these verbs with noun phrases modified

[8] Lexical prefixes are prefixes that spell out syntactic structures within VP (in contrast to superlexical prefixes which relate to aspectual projections above VP) and thus provide resultant state semantics, which can be considered to correspond to natural telicizing (which it generally do).

by *odin-jedinstvennyj* ‘one and only’, which decreases the probability of the cumulative interpretation.

For the verb *konnektit’s’a* ‘to connect’, I posed two questions within different contexts (included in two different versions of the questionnaire). One context included the complement *s l’ud’mi* ‘with people’, which is assumed to tend to take the prefix *s-* as its natural telicizer. The other context involved the complement *k serveru* ‘to the server’, which is assumed to tend to take the prefix *pri-* as its natural telicizer.

Three filler questions present contexts with verbs derived from non-borrowed roots (at least not later than the Proto-Slavic period): *merit’* to row’, *gotovit’* to cook’, and *pisat’* ‘to write’. Their natural telic forms feature different prefixes: *pri-*/*po-* , *pri-*, and *na-*, respectively. This selection ensures that respondents are not primed by neologism verbs that may share the same natural telicizer prefixes.

Altogether, there were 36 distinct questions, each corresponding to a unique imperfective verb. These verbs, along with their corresponding semantic tags, are listed in Table 3. The tags were assigned based on the tags of non-borrowed synonyms found in RNC and Tromsø’s database (see Section 2.1). Specifically, I used two tags that were introduced in Tromsø’s database, namely GRAPH and INTER.[9] Some verbs remain untagged where no appropriate tag could be assigned, or where the corresponding synonyms in TRNC or Tromsø’s database lacked tags.

*Table 3*

**Verbs in my questionnaire**

| Verb | Etymology/Meaning | Semantic tag |
|---|---|---|
| *donatit’* | to donate | POSS |
| *postit’* | to post | |
| *pušit’* | to push | MOVE |
| *šarit’* | to share (via Internet) | CHANGEST |
| *konnektit’s’a k* | to connect to (a server) | CONTACT |
| *konnektit’s’a s* | to connect with (people) | INTER |
| *čekat’* | to check | MENT |
| *dodžit’* | to dodge | MOVE:BODY |

[9] As far as I understand, GRAPH (examples from Tromsø’s database include *risovat’* ‘to draw’, *ill’ustrirovat’* ‘to illustrate’, among others) pertains to producing any form of graphics, while INTER (e.g. *vredit’* ‘to harm’, *zabotit’s’a* ‘to care’, and *reagirovat’* ‘to react’) relates to intercommunication.

*Ending of Table 3*

| Verb | Etymology/Meaning | Semantic tag |
|---|---|---|
| *invajtit'* | to invite | SPEECH |
| *rekvestit'* | to request | SPEECH |
| *referšit'* | to refresh | |
| *appruvit'* | to approve | SPEECH |
| *čekinit's'a* | to check in | INTER |
| *defjuzit'* | to defuse | IMPACT |
| *banit'* | to ban | INTER |
| *reportit'* | to report | SPEECH |
| *spojlerit'* | to spoiler (to tell the story) | SPEECH |
| *kodit'* | to code | IMPACT:CREAT |
| *khajpit'* | to hype | CHANGEST |
| *rašit'* | to rush | MOVE |
| *repostit'* | to repost | |
| *spamit'* | to spam | IMPACT |
| *skrollit'* | to scroll | MOVE |
| *guglit'* | to google | MENT |
| *bustit'* | to boost | CHANGEST |
| *nerfit'* | to nerf | CHANGEST |
| *farmit'* | to farm (items in a game) | POSS |
| *spaunit'* | to spawn (to cause to appear in a game) | BE:APPEAR |
| *defat'* | to defend | IMPACT |
| *fiksit'* | to fix | IMPACT |
| *sejvit'* | to save | POSS |
| *khilit'* | to heal | IMPACT |
| *majnit'* | to mine (cryptocurrency) | POSS |
| *vanšotit'* | to oneshot | IMPACT:DESTR |
| *juzat'* | to use | |
| *skrinšotit'* | to screenshot | graph |

## 2.3. Results

First, I split the tags that are written with a semicolon in RNC and Tromsø's database and start with IMPACT or MOVE into separate entities. This was done to account for possible similarities between tags like IMPACT:DESTR, IMPACT:CREAT, and IMPACT itself, as well as MOVE:BODY and MOVE (I did not split the tag BE:APPEAR, as its components are not present in my data). I then divided all the given answers into several parts according to the number of natural telic verbs provided. I focused solely on prefixed natural telics with the same root as the corresponding stimulus verbs, excluding verbs with the suffix *-nu* (for discussion, see Section 2.2). If the gender of the verb was incorrect, I ignored the mistake and still included the answer in my data. In total, I identified 633 natural telic verbs. The distribution of these verbs is shown in Fig. 2. As can be seen, my distribution differs significantly from distribution by Janda et al. (see Fig. 1). In our sample, the most common prefix is *za-* rather than *po-*.

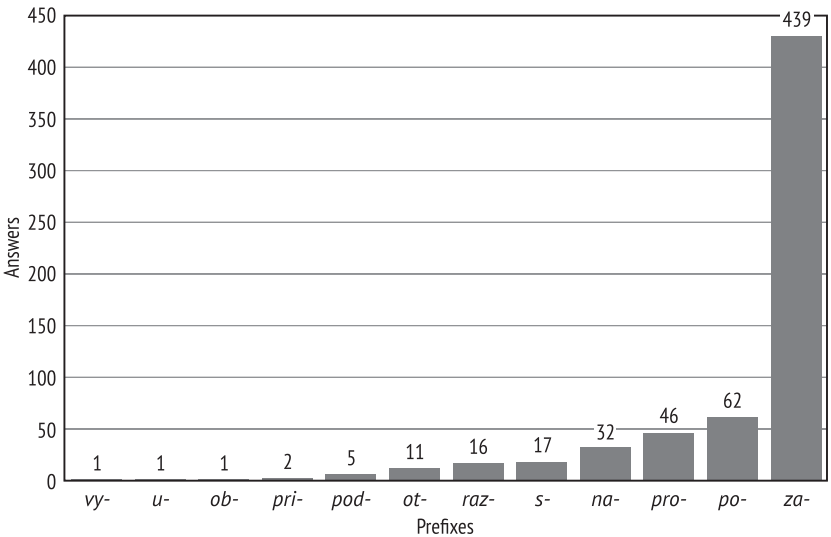


**Fig. 2.** Distribution of natural telicizer prefixes of neologisms

Moreover, this is not simply a bias in my data toward certain semantic classes, as the prefix *za-* is the most common in each semantic class, as illustrated in Fig. 3.

The distribution shown in Fig. 3 can be compared with Tromsø's distribution of natural telicizer prefixes across semantic classes. Fig. 4 presents a diagram I created using data from their site to illustrate this comparison. The diagram shows that the prefix *za-* is the most common option only for IMPACT verbs.

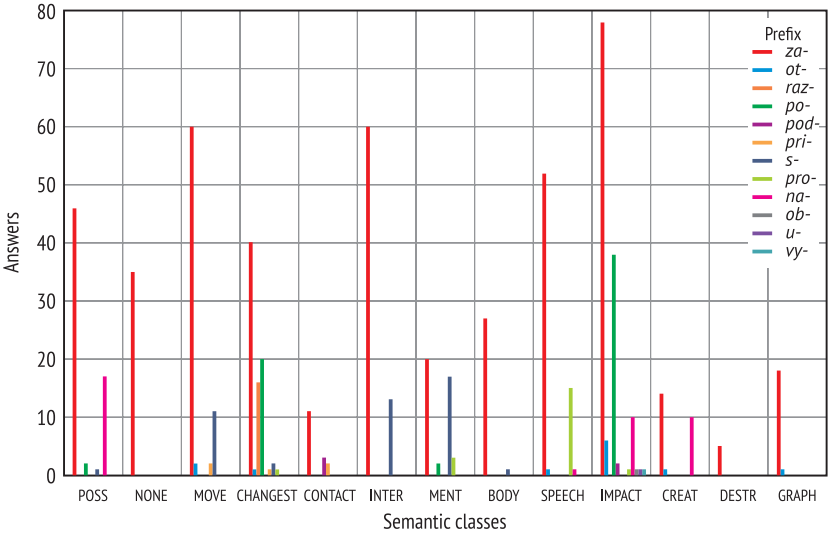


**Fig. 3.** Distribution of natural telicizer prefixes of neologisms across semantic classes

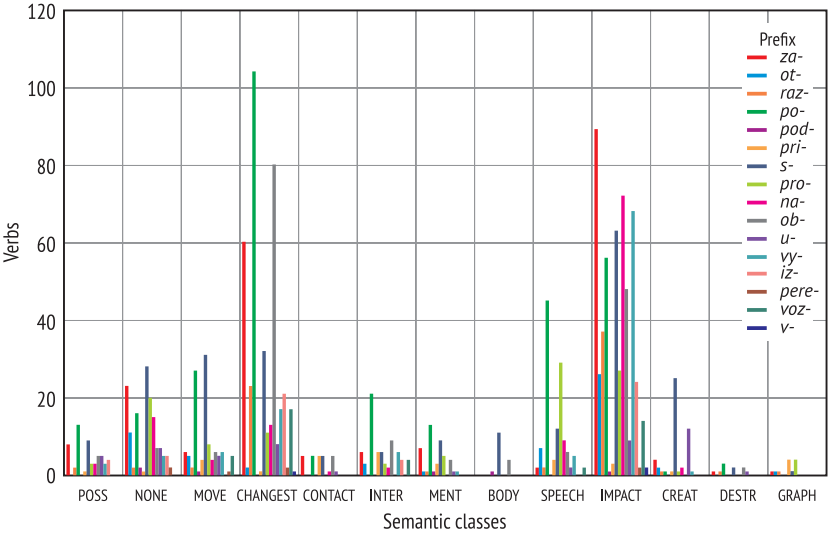


**Fig. 4.** Janda et al.'s distribution of natural telicizer prefixes across semantic classes

However, it is not the case that the prefix *za-* is the most frequent for every neologism verb. Nevertheless, semantic tagging does not differentiate non-*za-* verbs from the others. The distribution of the prefixes for each verb is presented in Table 4. There exists an imperfective verb, *farmit'* 'to farm (items in a game)', for which the most frequent natural telicizer prefix is *na-*. Notwithstanding that the prefix *na-* may be considered cumulative in the verb *nafarmit'* 'to farm a lot', since an attempt was made to present a context unmarked with respect to the quantitativeness of the direct object, it seems that the cumulative interpretation is the default one. Thus, *nafarmit'* 'to farm a lot' (as well as the less frequent *namajnit'* 'to mine a lot') should be considered natural telics. Similarly, in Tromsø's database, there exists a natural telic *nakopit'* 'to accumulate a lot' for the verb *kopit'* 'to accumulate', exhibiting a similar pattern: it requires the direct object to be an amount by default. Additionally, there are three verbs for which the most frequent natural telicizer is *pro-*: *čekat'* 'to check', *spojlerit'* 'to spoiler' and *skrollit'* 'to scroll'. Furthermore, two verbs, *nerfit'* 'to nerf' and *fiksit'* 'to fix', have the prefix *po-* as the most common natural telicizer. Moreover, the prefix *raz-* is as frequent choice for natural telicizer as the prefix *za-* for the verb *khajpit'* 'to hype' and slightly less frequent than *za-* for the verb *šarit'* 'to share (via Internet)'.

*Table 4*

**Distribution of natural telicizer prefixes for each verb**

| Verb | Prefixes |
|---|---|
| *donatit'* | 19 *za-* |
| *postit'* | 19 *za-* |
| *pušit'* | 13 *za-*; 2 *ot-* |
| *šarit'* | 8 *za-*; 7 *raz-*; 5 *po-* |
| *konnektit'sʼa k* | 11 *za-*; 3 *pod-*; 2 *pri-* |
| *konnektit'sʼa s* | 28 *za-*; 13 *s-* |
| *čekat'* | 16 *pro-*; 2 *za-* |
| *dodžit'* | 27 *za-*; 1 *s-* |
| *invajtit'* | 12 *za-* |
| *rekvestit'* | 16 *za-*; 1 *ot-* |
| *referšit'* | 1 *za-* |

*Ending of Table 4*

| Verb | Prefixes |
|---|---|
| *appruvit'* | 3 *za-* |
| *čekinit's'a* | 15 *za-* |
| *defjuzit'* | 8 *za-* |
| *banit'* | 17 *za-* |
| *reportit'* | 12 *za-*; 1 *pro-* |
| *spojlerit'* | 14 *pro-*; 9 *za-*; 1 *na-* |
| *kodit'* | 14 *za-*; 10 *na-*; 1 *ot-* |
| *khajpit'* | 9 *raz-*; 9 *za-*; *1 na-*; 1 *po-*; 1 *pro-*; 1 *s-* |
| *rašit'* | 16 *za-*; 1 *s-* |
| *repostit'* | 5 *za-* |
| *spamit'* | 34 *za-*; 1 *ob-* |
| *skrollit'* | 11 *pro-*; 4 *za-* |
| *guglit'* | 18 *za-*; 3 *na-*; 2 *po-*; 1 *pro-* |
| *bustit'* | 12 *za-*; 1 *pro-* |
| *nerfit'* | 14 *po-*; 11 *za-*; 1 *ot-* |
| *farmit'* | 10 *na-*; 5 *za-*; 1 *s-* |
| *spaunit'* | 19 *za-* |
| *defat'* | 8 *za-*; 1 *po-*; 1 *u-* |
| *fiksit'* | 33 *po-*; 1 *za-* |
| *sejvit'* | 14 *za-* |
| *khilit'* | 8 *za-*; 5 *ot-*; 4 *po-*; 2 *pod-*; 1 *pro-*; 1 *vy-* |
| *majnit'* | 8 *za-*; 7 *na-*; 2 *po-* |
| *vanšotit'* | 5 *za-* |
| *juzat'* | 10 *za-* |
| *skrinšotit'* | 18 *za-*; 1 *ot-* |

Another factor that supports considering the prefix *za-* as the default option is the observed correlation between the usage of this prefix and whether respondents play computer games. Among non-gamers, 74% of natural telics have the prefix *za-*, whereas among gamers, only 64% do. The analysis reveals that gamers significantly less frequently employ the prefix *za-* as natural telicizer, with a *p*-value of 0.012 (<0.05, indicating a statistically significant result) and an odds ratio of 0.65 (suggesting a repulsion relationship between gamers and the *za-* prefix). This finding was obtained by applying Fisher's exact test on a 2 × 2 contingency table, with columns representing the presence or absence of the *za-* prefix and rows denoting whether the respondent is a gamer or not a gamer. Thus, if a person is less familiar with a verb, they are more prone to use the prefix *za-* as natural telicizer.[10]

Furthermore, a notable overall discrepancy can be identified when comparing the observed correlations between semantic tags and prefixes of the neologisms with the findings reported by [Janda et al., 2013]. The *p*-values obtained from applying Fisher's exact test (following the approach used by [Ibid.],[11] see Section 2.1) are presented in Table 3, and the corresponding attractions and repulsions are shown in Table 4. In this table, the semantic tags are positioned identically to table by Janda et al. (see Table 2), but the background colors of their text are determined by the neologism data. This reveals that there are numerous discrepancies, most of which involve shifts to or from neutral, however, probably due to data insufficiency. Notably, the IMPACT tag has changed its position in three columns of the table.

Thus, in addition to the general discordance with the correlations proposed by Janda et al., two primary issues arise with the semantic invariant approach. First, how can *za-* function as the default prefix and simultaneously possess specific semantic content, as suggested by the semantic invariant approach? Second, why do several natural telic clusters (with the prefixes *na-*, *po-*, *pro-* and *raz-*) exist that cannot be identified by their semantics?

[10] Such correlations are not found between the age of the respondents and the distribution of the prefixes. Testing the age and prefix columns for contingency gives a chi-square value of approximately 160 with 209 degrees of freedom, meaning the *p*-value is greater than 0.99.

[11] I did not include BEHAV verbs because they are absent from my sample. Furthermore, unlike Janda et al., I did not exclude verbs with multiple natural telics because my research explores the distribution of prefixes among both verbs and semantic classes, both of which are unknown variables. Additionally, my sample did not contain any verbs with multiple tags from the three classes in question, so there were no verbs with multiple tags to exclude.

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*Table 5*

**Correlation between semantic tags and prefixes of neologisms**

| Semantic tag | *po-* | *s-* | *na-* | *za-* | *pro-* |
|---|---|---|---|---|---|
| IMPACT | [+] $4.9 \times 10^{-14}$ | [–] 0.032 | [+] 0.55 | [–] 0.00016 | [–] 0.00047 |
| CHANGEST | [+] $4.6 \times 10^{-6}$ | [–] 0.71 | [–] 0.049 | [–] $2.9 \times 10^{-5}$ | [–] 0.15 |
| SOUND & SPEECH | [–] 0.0015 | [–] 0.24 | [–] 0.11 | [+] 0.41 | [+] $9.7 \times 10^{-6}$ |

*Table 6*

**Attractions and repulsions between semantic tags and prefixes of neologisms to [Janda et al., 2013] (see Table 2)**

| | *po-* | *s-* | *na-* | *za-* | *pro-* |
|---|---|---|---|---|---|
| **Attractions** | CHANGEST | IMPACT | IMPACT | IMPACT | SOUND & SPEECH |
| **Neutral** | SOUND & SPEECH | – | – | CHANGEST | – |
| **Repulsions** | IMPACT | SPEECH<br>CHANGEST | CHANGEST<br>SPEECH | SPEECH | CHANGEST<br>IMPACT |

## 3. Analysis

As we have observed, our empirical data does not align well with the semantic invariant approach. Providing a comprehensive alternative analysis is beyond the scope of this paper; however, I outline a potential direction for future research on neologisms.

I argue that the scalar approach offers a superior explanation and prediction of natural telicizer prefix selection phenomena. Following [Kagan, 2015], I define a scale as "a set of degrees (abstract representations of measurement) that are ordered along a certain dimension (e.g., height, duration, temperature, etc.)."

Additionally, I adopt the Scale Hypothesis:

(5) **Scale Hypothesis** (adapted from [Kagan, 2011])

Verbal prefixes introduce a relation between two degrees on a **scale**: a degree that is provided bya predicate and a degree associated with a standard of comparison.
The predicate **scale** can be lexicalized by the verbal **stem**, predicate **arguments** or by the **prefix** itself.

In the following subsections I implement Scale Hypothesis in describing the behavior of the verb *konnektit's'a* and the prefixes *na-*, *pro-* and *za-*.

### 3.1. Verb *konnektit's'a*

In my data, there were two stimulus sentences involving the imperfective verb *konnektit's'a* 'to connect': one with the PP *s l'ud'mi* 'with people' and the other with the PP *k serveru* 'to a server'. These two usages of the same verb provoked different distributions of prefixes (see Table 4). While the semantic invariant framework can explain this divergence by attributing different meanings to these usages, how can we explain it within scalar approach? I propose that the verb *konnetkit's'a* 'to connect' bear the same meaning in both usages: 'to connect to a server' and 'to connect with people'. The difference lies in the scale lexicalized by PP. In Russian, different prefixes can be selected for different scales. The PP *s l'ud'mi* 'with people' is in instrumental case and the entire predicate measures along the path to the state of being with [people] and requires the prefix *s-*. Contrary to this, the PP *k serveru* 'to a server' imposes the measure along the path to a place and comes with the prefixes *pri-*/*pod-*.

### 3.2. Prefix *na-*

As posited in [Kagan, 2015; Zinova, 2021], the cumulative prefix *na-* takes a predicate that has its argument's scale[12] as its measure dimension and posits the starting point at the beginning of the scale and the end at or above certain standard of comparison. In our data, the imperfective verbs *majnit'* 'to mine (cryptocurrency)' and *farmit'* 'to farm (items in a game)' have amount verbal scale (which is a nominal scale) in their lexical meaning (it is a descriptive semantic fact), and, consequently, their telic forms tend to measure this scale by default. One of my respondents commented in the answer field that *zamajnit' odnu-edinstvennuju satošu* 'to mine one and only satoshi' can be used instead of *namajtnit' odnu-edinstvennuju satošu* only if the goal of mining was this one satoshi. Thus, if the direct object is not quantified (a marked situation in this context), there is no amount scale to measure, and consequently, the prefix *na-* is unavailable. This scenario creates an opportunity for the prefix *za-* to appear, a property of *za-* that will be discussed in Subsection 3.4.

### 3.3. Prefix *pro-*

All *pro*-verbs from my sample, *pro-čekat'* 'to check completely', *pro-spojlerit'* 'to spoiler completely', and *pro-skrollit'* 'to scroll completely', are presented in (6) with the crucial parts of the corresponding contexts from my questionnaire.

(6) a. Ja polnostju pro-**ček**-a-l mid.
1SG completely COMP-**check**-TV-PAST.SG.M middle
'I **checked** the middle completely.'

b. Za p'at' minut pro-**spojler**-i-l-a mne ves'
in five minutes COMP-**spoiler**-TV-PAST-SG.F me whole
ejo s'uǰet.
its plot
'She **spoilered** me the whole plot in five minutes.'

c. On za sekundu pro-**skroll**-i-l odnu stranitsu.
3SGin second COMP-**scroll**-TV-PAST.SG.M one page
'It **scrolled** one page in a second.'

All three verbs have an incremental theme measured by length: *mid* 'middle', *s'uǰet* 'plot' and *stranitsa* 'page'. I suggest that contexts such as the one provided below can serves as a test for identifying length-measured themes.

[12] Actually, as argued in [Romanova, 2007; Rudnev, 2024], the scale is not necessarily an argument scale but rather any degree-of-change scale [Kennedy, Levin, 2002].

(7) Ja pro-**ček**-a-l mid dal'še, čem ty.
I COMP-**check**-TV-PAST.SG.M middle farther than you
'I **checked** the middle farther than you did.'

The use of the prefix *pro-* can be attributed to the presence of a length-measured theme. This is evident in example (8), where the verb *čekat'* 'to check' is used without a length-measured theme, making the prefix *pro-* seem very unusual based on my introspection.

(8) ??Ja pro-**ček**-a-l dver', ona zakryta.
1SG COMP-**check**-TV-PAST.SG.M door, it closed
Intended: 'I **checked** the door, it is closed.'

## 3.4. Prefix *za-*

Following [Tolskaya, 2018a], I propose that *za-* not only introduces a relation between two degrees but also a scale itself: "The invoking of a nonlexicalized scale might be a special property of *za-*, as we see a somewhat similar picture when it modifies path. The location entered does not have to be the logical end of the trajectory along which the figure moves. For example, *za-jti v magazine*[13] 'Za-walk into shop' can refer to a brief digression from the path, for example, stopping by a shop on the way home. If the shop is the main goal of the journey, rather than a stop along the way, a different goal prefix may be preferred to denote the arrival, for example, *vo-* or *pri-*" [Tolskaya, 2018a, p. 217].

If a verb, its arguments, modifiers, or context do not provide any inherent scale, the only viable option is to bound the predicate with the prefix *za-*. This implies that the prefix *za-* serves as the default natural telicizer option for verbs lacking a lexicalized scale. In our data set of neologisms, *za-* emerges as the predominant default for nearly all verbs (Table 4), and it is more prevalent among non-gamers (see Subsection 2.3). Hence, I propose that Russian neologism verbs (probably most, but not all) exhibit morphological defectiveness and lack an inherent scale. While the scale can potentially arise for the entire phrasal predicate due to contextual factors, it remains unattainable for non-gamers unfamiliar with specific gamer terminology and related concepts. This characteristic aligns with the well-established property of borrowed roots, which are unable to express certain features that native roots can convey. For instance, certain native Persian roots possess the ability to directly attach verbal affixes (9), whereas borrowed Arabic roots in Persian necessitate the accompaniment of light verbs (10).

[13] It is probably a typo: the correct form is *magazin* rather than *magazine*.

(9) man mi-**rav**-am.
1SG IMPF-**go**-1SG
'I am **going**.'

(10) man **harakat** mi-**kon**-am.
1SG **move** IMPF-**do**-1SG
'I am **moving**.'

## 4. Conclusion

In this paper, I examined the predictability of the semantic invariant approach to natural telicizer prefix selection and demonstrated its infeasibility. I showed that the scalar approach is more effective at explaining the selection phenomena. Although semantic classes defined by the Russian National Corpus may sometimes overlap with the different capabilities of verbs in lexicalizing scales, it is the available scales that primarily determine the choice of natural telicizer prefixes, rather than the verb's semantics itself.

Most prominently, this is demonstrated by the presence of a default natural telicizer, the prefix *za-*, which is argued to be able to lexicalize a scale. It telicizes morphologically defective neologism verbs, which do not exhibit this ability. A phenomenon that arises from borrowing cannot be explained by lexical semantics.

As noted by an anonymous reviewer, there is a possibility that my data and that of Janda et al. exhibit different tendencies due to their essential differences. Native lexicon and neologisms represent two distinct systems with their own rules. However, I propose that the statistically significant contradictions in our data arise primarily from the lack of control over the scales of predicates. Since the scales of a predicate are, to some extent, related to a verb's lexical semantics, this give rise to both accordance and discordance in our data. Moreover, the very idea of assigning an aspectual pair to a verb itself, rather than to an entire predicate, is fundamentally flawed. An outline of its problems was provided in Section 3, where examples were shown in which lexical semantics alone fail to account for the observed patterns. A similar absence of the whole picture can be observed in Tromsø's database itself. For instance, the verb *lit'* 'to pour (liquid)', tagged as MOVE, has two natural telic counterparts: *vylit'* 'to pour out of' and *slit'* 'to pour off'. The difference is evident: the first telic verb measures along the path from a volume object, while the second measures along the path from a surface. Thus, I suggest that the same scalar approach could be applied to explain the distribution of natural telicizer prefixes in the native lexicon, unless strong evidence emerges to suppot the postulation of two distinct systems in Russian and, more broadly, in language as a whole. However, this requires further statistical research.

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