The Meaning of Russian Verbal Prefixes

Laura A. Janda (http://hum.uit.no/lajanda/)
CLEAR Group
(Cognitive Linguistics: Empirical Approaches to Russian)
Learn more about Russian Prefixes in our book

Data and statistics available at:
http://emptyprefixes.uit.no/book.htm
Overview

1. The problem
   • “Empty” prefixes in Russian?

2. The solution
   • Verb classifiers in Russian

3. The evidence
   • radial category profiling
   • semantic profiling
   • constructional profiling
   • prefix variation
   • aspectual triplets
1. The problem

- Prefixes in Natural Perfectives like *na-pisat* ‘write’ and *s-varit* ‘cook’ are traditionally considered semantically “empty”

BUT

- Why does Russian need **SIXTEEN** different “empty” prefixes for ‘+perfective’?
- Why do all 16 “empty” prefixes also have **non-empty** uses?
- How do native speakers know **which** prefix to use with borrowed verbs like *pro-fil’trovat* ‘filter’ and *za-asfal’trovat* ‘pave with asphalt’?
- Why do some verbs use **more than one** “empty” prefix, like *gruzit* ‘load’ > *na-gruzit, za-gruzit, po-gruzit*?
2. The solution: a Hypothesis

Russian perfectivizing prefixes constitute a verb classifier system

• Verb classifiers are parallel to numeral classifiers (a type of noun classifier system)

• Recognition of perfectivizing prefixes as verb classifiers brings real advantages:
  • Facilitates typological comparisons
  • Improves description
  • Has pedagogical implications
Numeral Classifier Systems Worldwide

<table>
<thead>
<tr>
<th>Yucatec Maya examples</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘un-tz’íit kib’</td>
<td>[one long-thin wax]</td>
</tr>
<tr>
<td>‘un-tz’íit che’</td>
<td>[one long-thin wood]</td>
</tr>
<tr>
<td>‘un-tz’íit nal</td>
<td>[one long-thin corn]</td>
</tr>
<tr>
<td>‘un-tz’íit há’as</td>
<td>[one long-thin banana]</td>
</tr>
<tr>
<td>‘un-wáal há’as</td>
<td>[one flat banana]</td>
</tr>
<tr>
<td>‘un-kúul há’as</td>
<td>[one planted banana]</td>
</tr>
<tr>
<td>‘un-kúuch há’as</td>
<td>[one load banana]</td>
</tr>
</tbody>
</table>
Languages without and with numeral classifiers

<table>
<thead>
<tr>
<th>English (no classifiers)</th>
<th>Yucatec Maya (classifiers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Split system: plural obligatory for count nouns, restricted for mass nouns</td>
<td>• Unified system: all nouns are mass nouns, plural not obligatory</td>
</tr>
<tr>
<td>• count nouns combine directly with numerals (<em>one candle, two sticks, three bananas</em>), units assigned to mass nouns (<em>one cup of water, two lumps of clay, three cubes of sugar</em>)</td>
<td>• classifier (&quot;unitizer&quot;) obligatory with numerals</td>
</tr>
</tbody>
</table>

Despite the name, numeral classifiers are actually a type of NOUN CLASSIFIERS
The role of numeral classifiers

• Numeral classifiers are “unitizers”
• Numeral classifiers convert the meanings of nouns into countable units that refer to objects
• Numeral classifiers 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 most nouns have one characteristic classifier

- McGregor explores overt systems of verb classification in Australian languages
- Develops distributional and other criteria for recognizing classifier systems
- Recurrent semantic features of verb classifier systems:
  - Vectorial (trajector-landmark path) configuration = verbal analog of shape in nominal classifier systems
  - Aspect = verbal analog of quantification
# Numeral and Verb Classifiers: a comparison

<table>
<thead>
<tr>
<th>Yucatec Maya nouns</th>
<th>Russian verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• bare noun refers to a substance</td>
<td>• simplex verb refers to unbounded state or activity</td>
</tr>
<tr>
<td>• classifier + noun refers to an object</td>
<td>• prefix + verb refers to an event</td>
</tr>
<tr>
<td>• classifier used with quantification by numerals</td>
<td>• prefix used with quantification by aspect</td>
</tr>
<tr>
<td>• classifiers refer to shape</td>
<td>• prefixes refer to path</td>
</tr>
<tr>
<td>• initially considered empty formal markers</td>
<td>• traditionally considered empty formal markers</td>
</tr>
</tbody>
</table>
3. The evidence

• Overall distribution

• Statistical studies
  • radial category profiling
  • semantic profiling
  • constructional profiling
  • prefix variation
  • aspectual triplets

• All evidence is based on data from Exploring Emptiness database (http://emptyprefixes.uit.no/): aggregate of Natural Perfectives (Evgen’eva 1999, Ožegov & Švedova 2001, Cubberly 1982)
Russian has:
- 1429 simplex verbs
- that form 1981 Natural Perfectives
- using 16 prefixes

Distribution of so-called “empty” prefixes
Definition of classifier systems
(McGregor 2002)

• (i) There are a finite number of ways in which classifiers and classifieds can co-occur.
  ✔ Russian prefixes and verbs co-occur in prefixed verbs
• (ii) The group of classifiers has more than one element.
  ✔ Russian has 16 prefixes that are classifiers
• (iii) The group of classifieds has significantly more elements than the group of classifiers.
  ✔ Russian has 1429 verbs classified by 16 prefixes
• (iv) At least two of the groups of classifieds that are associated with two different classifiers must be significantly different from each other.
  ✔ All groups of verbs associated with prefixes are significantly different from each other (see radial category profiles and semantic profiles)
Default classifiers

• Languages with numeral classifier systems typically have one or more “default” classifiers that can be used with many types of objects

• Russian also has two prefixes that serve as default perfectivizers and are more frequent than all others, for example: *po-, s-*
McGregor’s additional requirement: the members of a set of classifiers “must show different behaviours” (2002: 17)

- Evidence will show different behaviors:
  - Each prefix is associated with a specific semantic group of verbs
    - radial category profiling
  - Each prefix has a specific semantic profile
    - semantic profiling
  - Prefixes behave differently with respect to the grammatical constructions they appear in
    - constructional profiling
  - Prefixes can contrast even when they are associated with the same verbs
    - prefix variation
  - Some prefixes are more likely to motivate the formation of secondary imperfectives than others
    - aspectual triplets
Radial category profiling

• 11 prefixes analyzed
  • Nearly 2000 verbs (both “non-empty” and “empty” uses)

• Method:
  • polysemy of each prefix established via analysis of all “non-empty” uses in verbs with frequency >100 in Russian National Corpus
  • this yields a radial category for the meanings of the prefix
  • comparison of prefix meanings with meanings of ALL simplex verbs that use the same prefix as an “empty” prefix
Radial category profiling, cont’d.
The prefix *raz-* as an example

“Non-empty” meanings of *raz-*

**APART:** *raz-pilit’* ‘saw’ = ‘saw apart’
**CRUSH:** *raz-toptat’* ‘stamp one’s feet’ = ‘trample, crush by stamping’
**SPREAD:** *raz-katat’* ‘roll’ = ‘roll out dough’
**SWELL:** *raz-dut’* ‘blow’ = ‘inflate, swell by blowing’

Meanings of simplex verbs with “empty” *raz-*

**APART:** *raz-bit’* ‘break’ = ‘break’
**CRUSH:** *raz-davit’* ‘crush’ = ‘crush’
**SPREAD:** *raz-vetvit’sja* ‘branch out’ = ‘branch out’
**SWELL:** *raz-puxnut’* ‘swell’ = ‘swell’
1. APART
   SP (36) raz-pilit’ ‘saw apart’
   NP (22) raz-gryzt’ ‘gnaw apart’

2. CRUSH
   SP (7) raz-toptat’ ‘trample’
   NP (5) raz-davit’ ‘crush’

3. SPREAD
   SP (31) raz-katat’ ‘roll out’
   NP (16) raz-vetvit’ sj a ‘branch out’

4. SWELL
   SP (2) raz-dut’ ‘inflate’
   NP (9) raz-puxnut’ ‘swell’

5. SOFTEN / DISSOLVE
   SP (7) raz-tvorit’ sj a ‘dissolve’
   NP (6) raz-tajat’ ‘melt’

6. EXCITEMENT
   SP (29) raz-kalit’ ‘make red-hot’
   NP (15) raz-gorjačit’ ‘heat up, irritate’

7. UN-
   SP (36) raz-gruzit’ ‘unload’

PA3-:
Radial Category Profiling
Radial category profiling, cont’d.

- FINDING: The radial categories of prefixes and verbs coincide
  - 2 prefixes – coincide in all meanings
  - 7 prefixes – coincide in most meanings
  - 2 prefixes – coincide in some meanings
- In the so-called “empty” uses of prefixes, there is conceptual overlap between the meanings of the prefixes and the meanings of the verbs
- Prefixes and verbs are matched for “shape”
  - See all eleven prefixes on our website:
  - [http://emptyprefixes.uit.no/methodology_rus.htm](http://emptyprefixes.uit.no/methodology_rus.htm)
Semantic profiling

• 5 of the “biggest” prefixes analyzed: po-, s-, za-, na-, pro-

• 382 verbs (ONLY “empty” uses, limited to verbs that use only one prefix and received only one tag)

• Semantic tags assigned independently in the Russian National Corpus:
  • IMPACT, CHANGEST, BEHAV, SOUND & SPEECH

• Statistically significant effect: chi-square = 248, df = 12, p = 2.2e-16; Cramer’s V effect size = 0.4
Semantic Profiling of по-, с-, на-, за-, про-
Semantic profiling, cont’d.

- Each prefix has a unique semantic profile.
- Further analysis makes it possible to discover the “shape” of each prefix:
  - *po-*: RESULT, SOME: <changest>
  - *s-*: TOGETHER, DOWN, ONCE: <behav>
  - *na-*: SURFACE, ACCUMULATION: <impact>, <behav>
  - *za-*: ATTACHMENT, COVER, FILL, CHANGE TO A FIXED STATE: <impact>
  - *pro-*: THROUGH, THOROUGH, DURATION: <sound>, <speech>

Find data, analysis, and full lists of verbs at our website: [http://emptyprefixes.uit.no/semantic_rus.htm](http://emptyprefixes.uit.no/semantic_rus.htm)
Constructional profiling

• Imperfective gruzit’ ‘load’ forms three perfective aspectual partner verbs:
  • na-gruzit’, za-gruzit’, po-gruzit’
• All three prefixes are supposedly “empty”:  
  • $na = za = po = 0$  ?
• All four ‘load’ verbs show constructional variation  
  • They can occur in both  
    • Theme-object construction  
    • Goal-object construction
Constructional profiling, cont’d.

- **Theme**-object construction
  - *gruzit’ seno na telegu*
  - [load hay-ACC onto wagon-ACC]
  - ‘load hay onto the wagon’

- **Goal**-object construction
  - *gruzit’ telegu senom*
  - [load wagon-ACC hay-INST]
  - ‘load the wagon with hay’

- Variants: passive and reduced constructions
  - Passive:
    - **Theme**-object: *seno gruženo na telegu* ‘hay is loaded onto the wagon’
    - **Goal**-object: *telega gružena senom* ‘the wagon is loaded with hay’
  - Reduced:
    - **Theme**-object: *gruzit’ seno* ‘load the hay’
    - **Goal**-object: *gruzit’ telegu* ‘load the wagon’
Constructional profiling, cont’d.

• 1920 examples of ‘load’ verbs extracted from Russian National Corpus (160M words)
• Dependent variable: Theme-object vs. Goal-object construction
• Independent variables:
  • Verb: unprefixed vs. na- vs. za- vs. po-
  • Active vs. Passive
  • Full vs. Reduced
• Results of logistic regression:
  • All independent variables serve as main effects
  • Interaction between Verb and Active vs. Passive

Find data and analysis at our website:
http://emptyprefixes.uit.no/constructional_rus.htm
Constructional profiling, cont’d.
Russian ‘load’ verbs: Active
Constructional profiling, cont’d.
Summary of findings

- Each prefix shows a different distribution of theme-object vs. goal-object constructions
- Differences are related to differences in meanings of the prefixes
  - *na*-: prefers goal-object, focus on vehicles and animates, consistent with SURFACE and ACCUMULATE meanings of prefix
  - *za*-: ATTACH meaning motivates theme-object, COVER and FILL motivate goal-object, CHANGE TO A FIXED STATE motivates both; many metaphorical uses
  - *po*-: prefers theme-object
- These differences are significant even when we take into account active vs. passive and full vs. reduced
- Findings are corroborated by data on the distribution of metaphorical uses and prepositions
## Prefix Variation

**What is it?**

<table>
<thead>
<tr>
<th>simplex imperfective</th>
<th>prefixed perfective (Natural Perfective)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>pisat’</em> ‘write’</td>
<td><em>na-pisat’</em></td>
</tr>
<tr>
<td><em>vjaznut’</em> ‘get stuck’</td>
<td>*za-vjaznut’, <em>u-vjaznut’</em></td>
</tr>
<tr>
<td><em>gruzit’</em> ‘load’</td>
<td>*za-gruzit’, *na-gruzit’, <em>po-gruzit’</em></td>
</tr>
<tr>
<td><em>marat’</em> ‘soil’</td>
<td>*vy-marat’, *za-marat’, *iz-marat’, <em>na-marat’</em></td>
</tr>
<tr>
<td><em>motat’</em> ‘wind’</td>
<td>*za-motat’, *na-motat’, *po-motat’, *pro-motat’, <em>u-motat’</em></td>
</tr>
</tbody>
</table>

**Prefix variation:**

2 or more prefixes used to form Natural Perfectives
# Prefix Variation

## What is it?

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<thead>
<tr>
<th>Simplex Imperfective</th>
<th>Prefixed Perfective (Natural Perfective)</th>
<th>Prefix Combination</th>
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<td><em>pisat</em> ‘write’</td>
<td><em>na-pisat</em></td>
<td></td>
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<td><em>vjaznut</em> ‘get stuck’</td>
<td>*za-vjaznut’, <em>u-vjaznut</em></td>
<td>[za][u]</td>
</tr>
<tr>
<td><em>gruzit</em> ‘load’</td>
<td><em>za-gruzit</em>, <em>na-gruzit</em>, <em>po-gruzit</em></td>
<td>[za][na][po]</td>
</tr>
<tr>
<td><em>marat</em> ‘soil’</td>
<td><em>vy-marat</em>, <em>za-marat</em>, <em>iz-marat</em>, <em>na-marat</em></td>
<td>[vy][za][iz][na]</td>
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<td><em>motat</em> ‘wind’</td>
<td><em>za-motat</em>, <em>na-motat</em>, <em>po-motat</em>, <em>pro-motat</em>, <em>u-motat</em></td>
<td>[za][na][po][pro][u]</td>
</tr>
<tr>
<td><em>mazat</em> ‘smear’</td>
<td><em>vy-mazat</em>, <em>za-mazat</em>, <em>iz-mazat</em>, <em>na-mazat</em>, <em>po-mazat</em>, <em>pro-mazat</em></td>
<td>[vy][za][iz][na][po][pro]</td>
</tr>
</tbody>
</table>
Prefix Variation: How extensive is it?

Basic facts:

- **1429** imperfective simplex verbs
- **16** prefixes, all participate in prefix variation
- **1981** prefixed Natural Perfectives
- **1043** simplex verbs select only one prefix
- **386** (27%) simplex verbs show prefix variation
  - **283** select TWO prefixes
  - **75** select THREE prefixes
  - **21** select FOUR prefixes
  - **4** select FIVE prefixes
  - **3** select SIX prefixes

Find full list of prefix combinations at our website:
http://emptyprefixes.uit.no/variation_rus.htm
Prefix variation: [za] | [u]

Simplex verbs in three (overlapping) semantic groups:

• DAMAGE, WRAP, CHANGE OF STATE – bring into a fixed state
  In many contexts these verbs are interchangeable, but there are some examples where distinction can be found
  • za-vjaznut’ ‘get stuck’ based on experience of passing through something narrow vs. u-vjaznut’ ‘get stuck’ based on experience of sinking down into something
  • za-kolot’ barana ‘slaughter a ram’ vs. u-kolot’ palec ‘prick a finger’
  • za-motat’ neutral ‘wind’ vs. u-motat’ metaphorical ‘leave’
  • za-činit’ ‘repair’ vs. u-činit’ ‘start, set in motion’

• OTHER – za-platit’ vs. u-platit’ ‘pay’
  • interchangeable in many uses, but
  • za-platit’ is more versatile in metaphorical use dorogo zaplatit’ za svobodu ‘pay dearly for one’s freedom’
  • u-platit’ cannot be used with regularly scheduled payments and has lower frequency overall
Prefix variation: summary

• Prefix variation is substantial, systematic, and governed by the meanings of the prefixes
• Prefix variation contra “empty” prefixes:
  • If prefixes were semantically empty perfectivizers, no simplex would need more than one prefix
  • If prefixes were semantically empty perfectivizers, patterns of prefix combination would be random rather than reflecting the meanings of the prefixes found in other types of perfectives
Aspectual triplets

A prefixed Natural Perfective with TWO imperfective correlates:
  • a **simplex imperfective** (IPFV 1)
  • a **secondary imperfective with a suffix** (IPFV 2)

<table>
<thead>
<tr>
<th>Simplex Imperfective (IPFV 1)</th>
<th>Perfective</th>
<th>Secondary Imperfective (IPFV 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>volnovat’sja</em> ‘get excited’</td>
<td><em>vz-volnovat’sja</em> ‘get excited’</td>
<td><em>vz-volnovyvatsja</em> ‘get excited’</td>
</tr>
<tr>
<td><em>žarit</em> ‘fry’</td>
<td><em>za-žarit</em> ‘fry’</td>
<td><em>za-žarivat</em> ‘fry’</td>
</tr>
<tr>
<td><em>žmurit</em> ‘squint’</td>
<td><em>za-žmurit</em> ‘squint’</td>
<td><em>za-žmurivat</em> ‘squint’</td>
</tr>
<tr>
<td><em>molknut</em> ‘shut up, fall silent’</td>
<td><em>za-molknut</em> ‘shut up, fall silent’</td>
<td><em>za-molkat</em> ‘shut up, fall silent’</td>
</tr>
</tbody>
</table>
Aspectual Triplets

• We formed hypothetical suffixed IPV2s for all 1981 Natural Perfectives and searched for them in both Russian National Corpus and Google

• Russian National Corpus:
  • 733 (37%) IPV2s attested
  • 435 (22%) with 10+ attestations
  • 203 (10%) low frequency (2-9 attestations)
  • 95 (5%) attested only once

• Google:
  • 1536 (77%) IPV2s attested
  • 1279 (65%) with 10+ attestations
  • 165 (8%) low frequency (2-9 attestations)
  • 92 (5%) attested only once
Comparison of use of simplex and secondary imperfectives in RNC

<table>
<thead>
<tr>
<th>Simplex Imperfective (IPFV 1)</th>
<th>Use</th>
<th>Secondary Imperfective (IPFV 2)</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>volnovat’sja</em> ‘get excited’</td>
<td>99.97%</td>
<td><em>vz-volnovyvat’sja</em> ‘get excited’</td>
<td>0.03%</td>
</tr>
<tr>
<td><em>žarit</em> ‘fry’</td>
<td>84.13%</td>
<td><em>za-žarivat</em> ‘fry’</td>
<td>15.87%</td>
</tr>
<tr>
<td><em>žmurit</em> ‘squint’</td>
<td>37.30%</td>
<td><em>za-žmurivat</em> ‘squint’</td>
<td>62.70%</td>
</tr>
<tr>
<td><em>molknut</em> ‘shut up, fall silent’</td>
<td>0.71%</td>
<td><em>za-molkat</em> ‘shut up, fall silent’</td>
<td>99.29%</td>
</tr>
</tbody>
</table>

View the complete list and frequencies at our website: [http://emptyprefixes.uit.no/triplets_rus.htm](http://emptyprefixes.uit.no/triplets_rus.htm)
Aspectual Triplets, continued

• Competition of IPV1 and IPV2
  – IPV1 is nearly exclusive for some triplets
• IPV2 is nearly exclusive for other triplets
• Competition IPV1 vs. IPV2 for some triplets
• Choice between IPV1 and IPV2 is governed by meanings of prefixes
• IPV2 is preferred when meaning of prefix focuses on a result produced intentionally and/or repeatedly
• The SOME meaning of po- inhibits formation of secondary imperfectives: we find 40% fewer triplets among po-prefixied verbs than expected given overall frequencies
Conclusions

- Russian has 16 prefixes that serve as a verb classifying system
  - prefixes are obligatory to mark quantified aspect (perfective)
  - prefixes classify the verbal lexicon (few exceptions)
  - prefixes classify verbs according to their “shape”
- This has probably been overlooked because
  - More attention has been paid to noun classifiers than to verb classifiers
  - Verb classifier systems have previously been recognized primarily in Asian and “exotic” languages (Chinese, Australian languages)
Conclusions, continued

- Russian aspectual classifier system
  - converts amorphous states and activities into discrete events
  - aspectual prefixes are not “empty”
  - meanings of prefixes are a decisive factor in all 5 studies
- Recognition of prefixes as a classifier system
  - facilitates typological comparison
  - improves description
  - significant pedagogical implications