What triggers morphological variation in Russian loan verbs

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1. Introduction

In recent years, there appeared a number of corpus and experimental works on morphological variation in Russian, see:

- Janda et al. 2013, Endresen 2015, Olsson 2018, 2021 on allomorphy and synonymy in verbal prefixes;
- Nesset & Janda 2010, Makarova & Janda 2009, Kuznetsova & Makarova 2012, Nordrum 2020 on variation in verbal suffixes (*–a-/-aj-, –nu-/-anu-*).

Suffix variation in loan verbs has not received considerable attention in literature. Some relevant cases, such as the use of suffixes *-ova-/-irova-*, are analyzed within research on biaspectual verbs (Horiguchi 2018).

> In modern Russian a loan verb can be introduced by a handful of suffixes:
> *-ova-, -eva-, -irova-, -stvova-, -nu-, -anu-, -i-, -a-, -niča-, -e-*.

2. Relevant theoretical questions

- How are loan verbs integrated into the system? (Are there any special markers for loan verbs?)
- Doublets (overabundace) / rivalry:
    - Many different suffixes with more or less the same function?
        - Thornton (2011, 2012) uses the term *overabundance;*
        - Bermel & Knittl (2012) call such forms *competing forms;*
        - Bauer (2014) refers to *variable outputs;*
        - Baayen et al. (2013) join several instances of relatively free variation in Russian under the label *rival forms;*
        - Marković (2012) calls this phenomenon *morphological synonymy*
    - The term *doublets* is mostly applied to variation in inflectional forms (see Lecic 2016; Divjak et al. 2016), however, other types of *morphological doubletism* are also discussed, cf. some English verbs (appr. 20) that vary between the strong and the weak formation of the past tense (*dive > dived / dove, leap > leaped / leapt, shine > shined / shone*; see Haber 1976, Parker 2022)

3. Data and research questions

Data: We analyze the distribution of the Russian suffixes *-ova-, -eva-, -stvova-, -irova-, -nu-,* and *-anu-,* as well as *-i-* and *-niča-,* in two resources:

- a database of all verbs featuring these suffixes that have an ipm > 4 in Lyashevskaya & Sharov (2009; http://dict.ruslang.ru/freq.php, based on the frequencies from the Russian National Corpus (RNC), which comprises **6,241 verbs**,
- the Russian web corpus RuTenTen11 (2011, https://www.sketchengine.eu/rutenten-russian-corpus/).

The suffixes *-eva-*, *-stvova-*, *-irova-* are often treated as allomorphs of *-ova-*, whereas *-anu-* is considered as an allomorph of *-nu-* (Townsend 1968; Švedova et al. 1980; Lopatin & Uluxanov 2016)

> ***Comment:** In this talk we place major focus on the allomorphs *-ova-*, *-eva-*, *-stvova-*, *-irova-* and *-nu-*, *-anu-*. The suffixes *-a-* and *-e-* are extremely frequent with original Slavic stems and are less productive with loan verbs, for which reason they are left outside the scope of this study.

Research questions (RQ):
How are these suffixes distributed among loan and original Slavic verbs? More specifically:
1. How are loan verbs with these suffixes integrated into the system of Russian verbal word-formation? What kind of prefixes are they compatible with?
2. Do the allomorphs behave similarly in terms of compatibility with loan verbs and derivational prefixes?

4. The distribution of suffixes across loan and Slavic verbs

The distribution of the suffixes *-ova-*, *-eva-*, *-stvova-*, *-nu-*, and *-anu-* is provided in Table 1 and Figure 1 below.

	Loan	Slavic	Total
-ova-	200	295	495
-eva-	9	64	73
-stvova-	0	74	74
-irova-	640	3	643
-nu-	5	740	745
-anu-	2	17	19
-niča-	12	23	35
-i-	152	3328	3480
Total	1,020	4,544	5,564

Table 1. Distribution of the suffixes across loan and Slavic verbs in our RNC database.
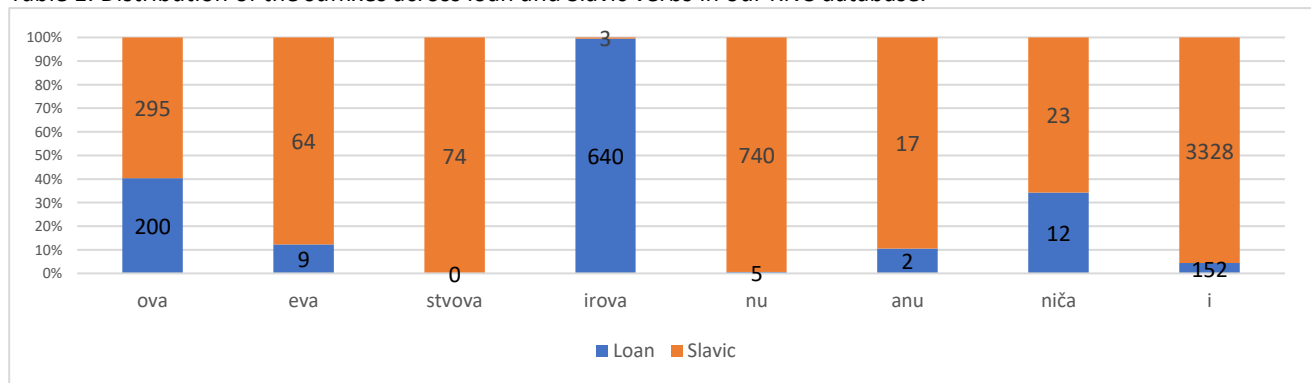

Figure 1. The distribution of the suffixes across loan and Slavic verbs in our RNC database.

Russian aspectual system. In Modern Russian each verbal lexeme is represented by so-called aspectual partners featuring imperfective vs. perfective aspect; one of the partners is derived from the other via prefixation or suffixation.

Tool	Imperfective	Perfective
Prefixation	del-a-t' 'do'	s-del-a-t' 'do'
Suffixation	pere-pis-yva-t' 'rewrite'	pere-pis-a-t' 'rewrite'

Biaspectuality among loan verbs. In Russian verbs in general, biaspectuality is a rare exception to the rule. Yet, of the 643 verbal items in –irova- constituting the "older" layer of loan verbs, only 182 items form 91 aspectual pairs; the remaining 461 verb lexemes are biaspectual. The 91 pairs are rather recent loans from the 20th century, often pertaining to technical issues:

e.g. *skanirovat'* 'scan.IPF' and *ot-skanirovat'* 'scan.PF'

The most recent loan verbs in –nu-, however, come in aspectual pairs, e.g. *lajk-nu-t'* 'like-once.PFV' and *lajk-a-t'* 'like.IPF'. Recent loan verbs with the suffix –nu-, which bears semelfactive meaning, are automatically attributed perfective aspect.

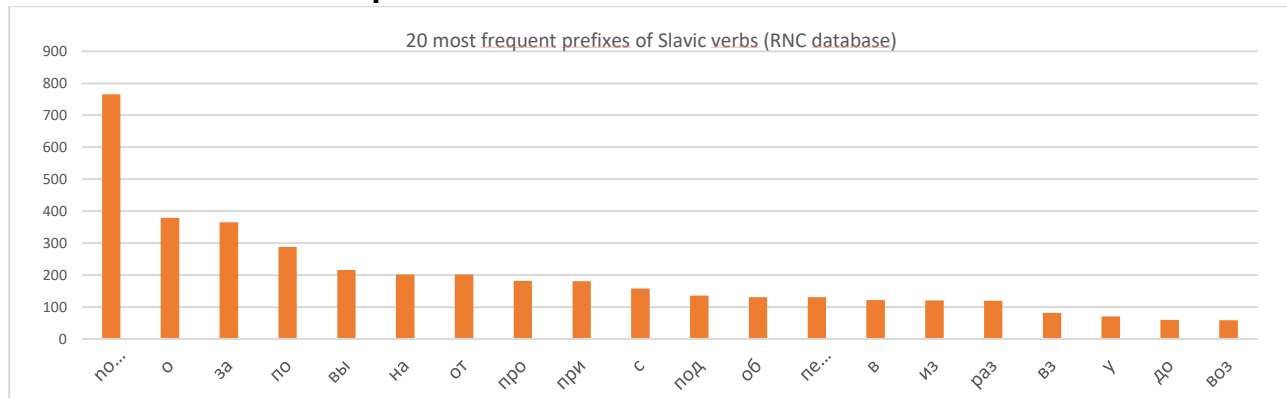## 4.2. The distribution of prefixes across loan and Slavic verbs

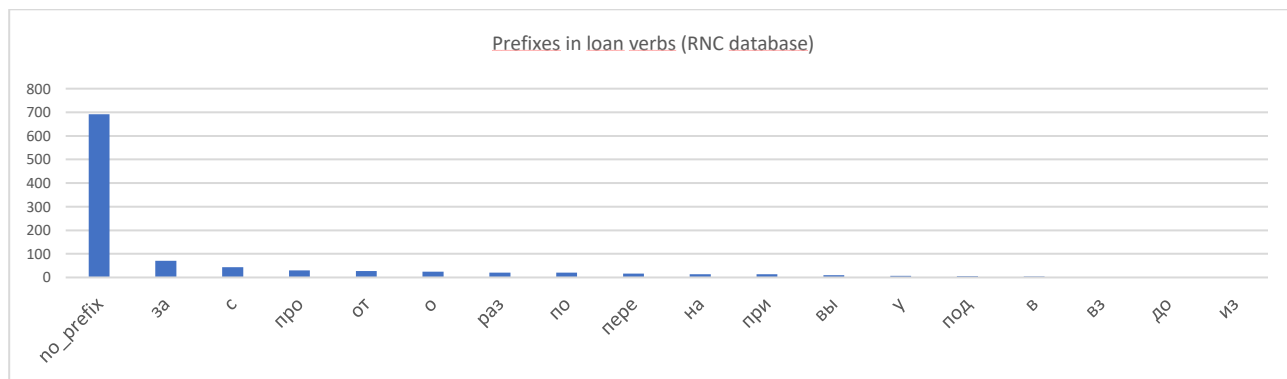Figure 2. The distribution of prefixes in Slavic verbs in the RNC database (verbs with 1 prefix).

Figure 5. The distribution of prefixes in loan verbs in the RNC database (verbs with 1 prefix).
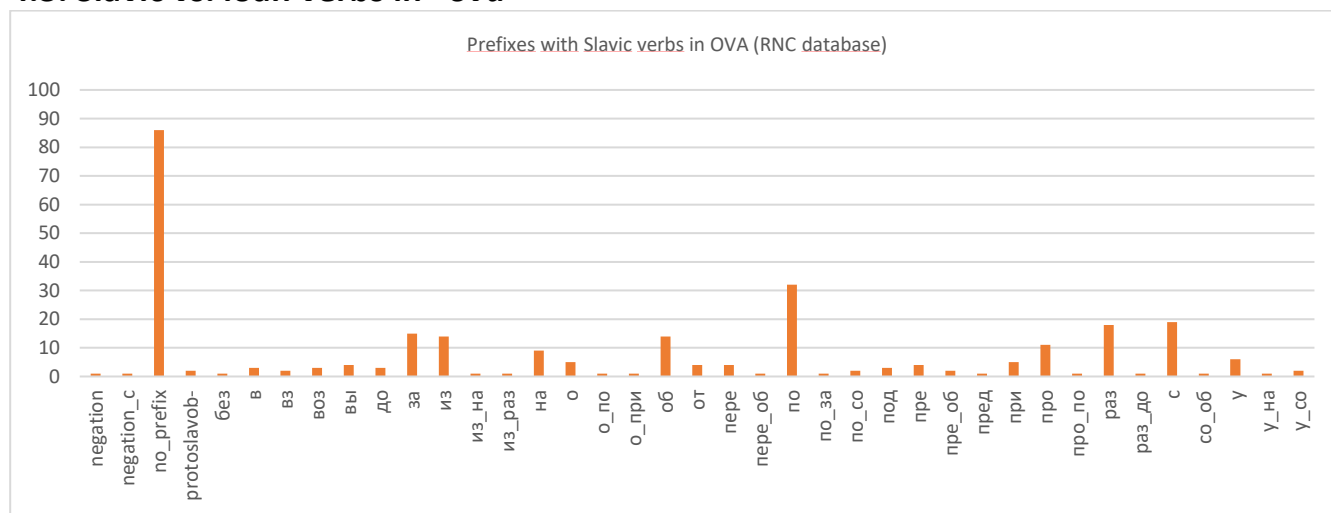
4.3. Slavic vs. loan verbs in *–ova-*

Figure 4. The distribution of prefixes in Slavic verbs in the RNC database (verbs with 1 prefix).
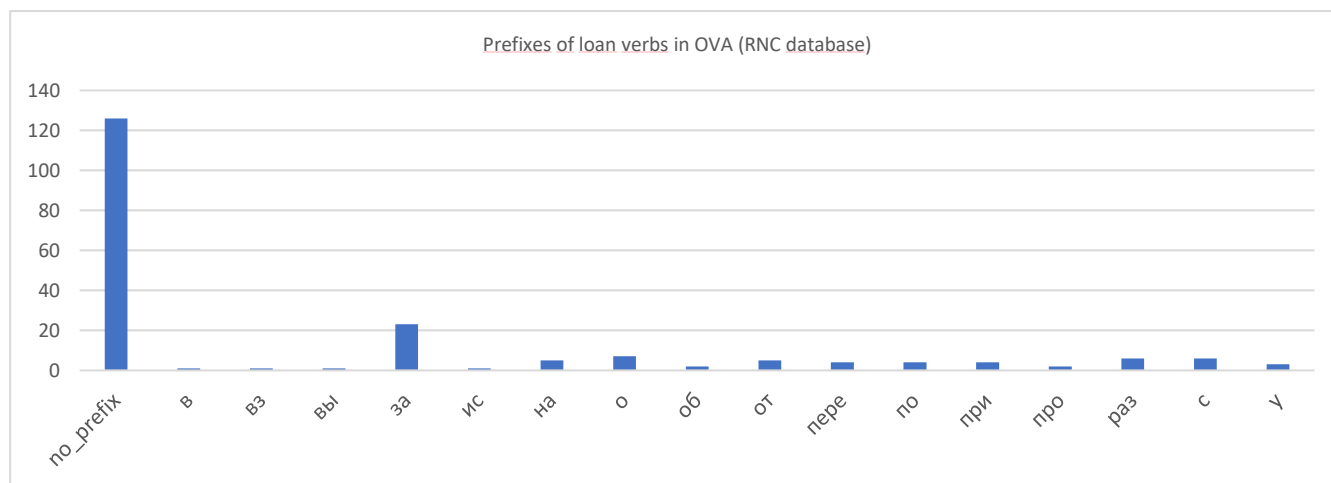

Figure 5. The distribution of prefixes in loan verbs in the RNC database (verbs with 1 prefix).

Fisher's Exact Test with simulated p-value (based on 1e+07 replicates) yields a p-value of 1e-07
=> highly significant

RQ1. How are loan verbs with these suffixes integrated into the system of Russian verbal word-formation? What kind of prefixes are they compatible with?

- *-irova-*: is a purely loan verb marker. Rare exceptions: *bron-irova-t'* 'book.IPF', *za-bron-irova-t'* 'book.PF'; *s-klad-irova-t'* 'put into storage; stock.IPF'
- *-ova-*: is widely used with both loan and Slavic stems, shows a more even distribution of different patterns
- *-stvova-*: is used only with Slavic stems; the base normally represents a noun or an adjective: *bed-stvova-t'* 'live in poverty.IPF' < *bed-a* 'misfortune.N'

- Prefix stacking is only attested in Slavic verbs. The most common prefixes for Slavic verbs are *o-*, *za-* and *po-*, while for loan verbs these are *za-* and *s-*.
- Native and loan verbs with *–ova-* prefer different prefixes:
  - loan verbs with *–ova-*: *za-* vs. Slavic verbs with *–ova-*: *po-*, *s-*, *raz-*

Whereas the suffix *-ova-* goes back to Old Church Slavonic, the suffix *-irova-* is a newer borrowing formed under the influence of German verbs in *-ieren* (e.g. Rus. *basirovat'* < Ger. *basieren* 'base').

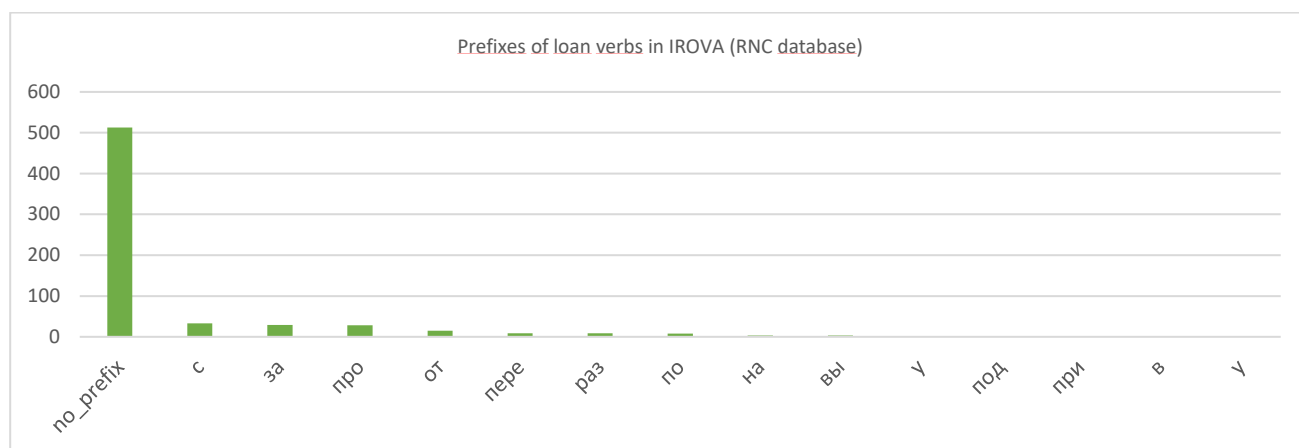## 5.1. Allomorphs with loan verbs: *-irova-/-ova-*

Figure 6. The distribution of prefixes in Slavic verbs in the RNC database (verbs with 1 prefix).
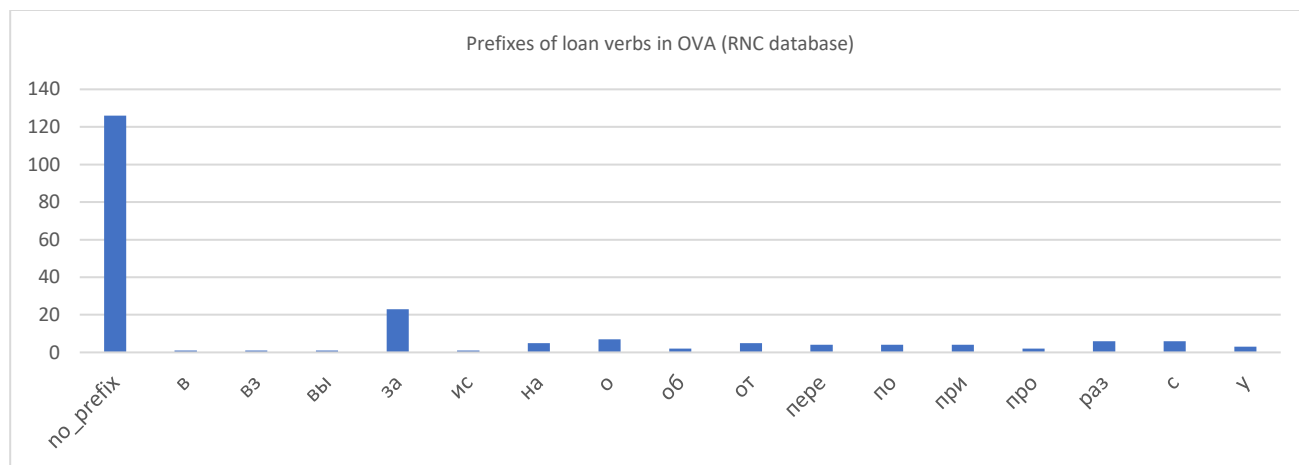

Figure 7. The distribution of prefixes in Slavic verbs in the RNC database (verbs with 1 prefix).

Fisher's Exact Test with simulated p-value (based on 1e+07 replicates) yields a p-value of 1e-07
$\Rightarrow$ highly significant

Verbs with the suffixes *–irova-* and *–ova-* prefer different prefixes
=> overabundance is possibly not a good explanation

Whereas the suffix *-ova-* goes back to Old Church Slavonic, the suffix *-irova-* is a newer borrowing formed under the influence of German verbs in *-ieren* (e.g. Rus. *basirovat'* < Ger. *basieren* 'base').

5.2. Allomorphs with loan verbs: *-nu-/-anu-*

Disclaimer: The RNC attestations show very few newer verbs that are used with *-nu-* and -anu-. We have therefore checked the distribution of the suffixes *-nu-/-anu-* across loan and Slavic verbs in RuTenTen, see Table 2 and Figure 8. Overall, RuTenTen contains 994 verbs with *-nu-* and *-anu-*, 21 of which are typos.

	RNC (115,642,044 tokens)		RuTenTen (18,280,486,876 tokens)	
	Loan	Slavic	Loan	Slavic
nu	5	740	37	851
anu	2	17	27	58
Total	7	757	64	909

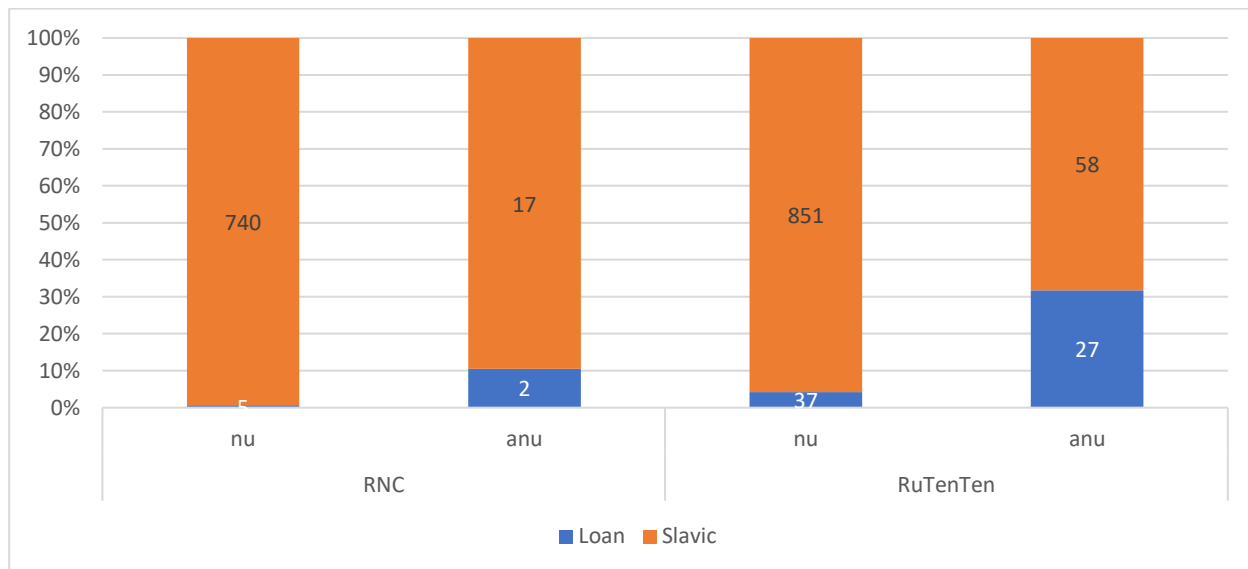Table 2. Distribution of the suffixes *-nu-* and *-anu-* across loan and Slavic verbs in RuTenTen vs. RNC.

Figure 8. Distribution of the suffixes *-nu-/-anu-* across loan and Slavic verbs in RuTenTen vs. RNC.

RuTenTen contains more new loan verbs than the RNC, many of which belong to youth slang and gaming:

Suffix	Verb	Gloss	# of attestations	ipm
-nu-	*xak-nu-t'*	'hack.PF'	652	0.036
-nu-	*tvit-nu-t'*	'message someone on Twitter.IPF'	766	0.042
-nu-	*ap-nu-t'*	'upgrade.PF'	366	0.020
-anu-	*press-anu-t'*	'put pressure on someone.PF'	214	0.012

-anu-	kaif-anu-t'	'get a buzz.PF'	202	0.011
-anu-	chip-anu-t'	'perform chip tuning.PF'	184	0.010

Table 4. Examples of the loan verbs with *-nu-* and *-anu-* in RuTenTen.

Note that although our RNC database selected only verbs that have an ipm > 4, most of new loan verbs with lower frequency, like the ones presented in Table 4, are not attested in RNC (see Table 5 below). This means that newer borrowings with the relevant suffixes should be checked in RuTenTen.

Suffix	Verb	Gloss	# of attestations RuTenTen	ipm RuTenTen	# of attestations RNC 2010	ipm RNC 2010
-nu-	xak-nu-t'	'hack.PF'	652	0.036	3	0.019
-nu-	tvit-nu-t'	'message someone on Twitter.IPF'	766	0.042	0	0
-nu-	ap-nu-t'	'upgrade.PF'	366	0.020	0	0
-anu-	press-anu-t'	'put pressure on someone.PF'	214	0.012	1	0,006
-anu-	kaif-anu-t'	'get a buzz.PF'	202	0.011	1	0,006
-anu-	chip-anu-t'	'perform chip tuning.PF'	184	0.010	0	0

Table 3. A comparison of the loan verbs with *-nu-* and *-anu-* from Table 4 in RuTenTen vs. RNC. The RNC search has been performed in the 2010 version (161,933,607 tokens), the closest available version to the one used by Lyashevskaya and Sharov (2009).

RQ2. Do the allomorphs behave similarly in terms of compatibility with loan verbs and derivational prefixes?
- Loan verbs with *–irova-* and *–ova-* have preferences for different prefixes: *-irova-*: s-, *pro-*, *s-* vs. *–ova-*: *za-*
- *-nu-* vs. *-anu-*: while *-nu-* is compatible with longer derivatives (*vyplesnut'-sja < vy- plesnut' < plesnut' < pleskat'* 'splash'), *-anu-* tends to be the end of derivational path (*rez-anu-t' < rezat'* 'cut'). In this sense, *-anu-* shows an independent behavior and can be regarded a separate suffix.

6. Summing up
- Slavic vs. loan stems:
  - *-irova-*: is a purely loan verb marker with rare are exceptions: *bron-irova-t'* 'book.IPF', *za-bron-irova-t'* 'book.PF'; *s-klad-irova-t'* 'put into storage; stock.IPF'
  - *-ova-*: is widely used with both loan and Slavic stems, shows a more even distribution of different patterns
  - *-stvova-*: is used only with Slavic stems; the base normally represents a noun or an adjective: *bed-stvova-t'* 'live in poverty.IPF' < *bed-a* 'misfortune.N'
  - Prefix stacking is only attested in Slavic verbs. The most common prefixes for Slavic verbs are *o-*, *za-* and *po-*, while for loan verbs these are *za-* and *s-*.

- Native and loan verbs with *–ova-* prefer different prefixes: loan: *-za* vs. native: *po-*, *s-*, *raz-*
- Allomorphy:
  - Loan verbs with *–irova-* and *–ova-* have preferences for different prefixes: *-irova-*: s-, *pro-*, *s-* vs. *–ova-*: *za-*
  - *-nu-* vs. *-anu-*: while *-nu-* is compatible with longer derivatives, *-anu-* tends to be the end of derivational path. In this sense, *-anu-* shows an independent behavior and can be regarded a separate suffix.
- Further research:
  - The next step will be to analyze the overall productivity of the suffixes in different time periods.
  - Particular focus on the productivity of verbs in *-i-* that coexist with earlier borrowings in *-irova-* (*modelirovat'* and *modelit'* 'model').

Appendix. The productivity of verbs in *-i-*

The suffix *-i-* currently seems to be one of the most productive suffixes (cf. the use of *-i-* with nominal motivating bases: Rus. *frend-i-t'* 'befriend' < Eng. *friend*).

The online resource Wordonline.ru (https://wordsonline.ru/samples/new.html) has presented 60 most common new verbs used by the younger generation:

Suffix	# of verbs	Example	Gloss
-i-	47	*ban-i-t'*	'ban on social media.IPF'
-ova-	6	*zip-ova-t'*	'archive data.IPF'
-irova-	3	*relaks-irova-t'*	'relax.IPF'
-a-	2	*juz-a-t'*	'use.IPF'
-nu-	1	*lojs-nu-t'*	'give a like on social media.IPF' (like > lajk > laic)
-eva-	1	*linč-eva-t'*	'lynch.IPF'

Table 4. 60 most common new verbs according to the online resource Wordonline.ru.

The suffix *-i-* as in *frend-i-t'* 'befriend' can even affect earlier borrowings, see Table 7.

Verb	Gloss	Suffix	# of attestations	ipm
model-irova-t'	'model'	*-ova-*	57,361	3.14
model-i-t'	'model'	*-i-*	339	0.02

Table 5. The distribution of the verbs 'model' in *RuTenTen.*

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