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# The interplay of phonological constraints in the construction of Russian denominal adjectives

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## 1 Introduction

The main focus of our paper are denominal adjectives in Russian, that are mainly considered from the phonological point of view. In particular, the paper deals with such issues as the selection of the stem of the base lexeme (which can undergo phonological modifications), affixal allomorphy and the competition between different formal strategies for the same syntactico-semantic construction. As far as the last issue is concerned, in particular, our research is carried on within a Construction Morphology framework (Booij 2010 and subsequent; Audring & Masini 2019), which we complement with a thematic morphology approach in the line of what has been proposed by Roché & Plénat (2014) and Plénat & Roché (2014) for French, and with a constraint-based approach, proposed by the same authors and Hathout (2009), among others. We propose to call the approach we adopt for the analysis of our data Constraint-Based Construction Morphology.

## 2 Constraint Based Construction Morphology

The approach in question aims at modelling the phonological properties of morphological constructions. Its main tenets are the following:

- morphological constructions operate on stems, which correspond to the phonological representation of a lexeme; more precisely they link a stem (or a collection of stems) with another stem (or collection of stems);
- phonologically, the exponent of a morphological construction (be it affixal or not) is viewed as a set of constraints on the phonological shape its outputs should have. These constraints are hierarchically ordered, construction-specific, and interact with other, more general, constraints.

In the lines of what has been proposed by Roché & Plénat (2014) and Plénat & Roché (2014), we consider that, phonologically speaking, morphological derivation mainly consists in an operation (e.g. an affixation) performed on a radical, a phonological object which is obtained from the stem of the base lexeme (cf. Roché 2010 on the distinction between stem and radical). In the most basic case, the stem of a lexeme and the radical of the derivative simply coincide (cf. Eng. DANCE ↔ DANCER). In other cases, however, the stem may undergo some manipulations in order to better fit the phonological constraints imposed by a derivational construction. These manipulations may correspond, on the one side, to the selection of a specific stem, either one which appears in other derivatives (e.g. Fr. PRIVATISME built on the stem /pʁivat/ of the adjective PRIVÉ ‘private’, like PRIVATISER), or which belongs to another lexeme within the same morphological family (e.g. Fr. PERSONNALISME, semantically built on the noun PERSONNE ‘person’, but formally built on the adjective PERSONNEL ‘personal’, cf. Roché 2009: 159 for details). On the other side, they may correspond to the creation of a specific radical through a phonological manipulation of the base stem. Plénat & Roché (2014), for instance, cite the case of Fr. GEEKARIAT (‘the status of being a geek’), built on the

noun GEEK, for which the emergence of the sequence /aɛ/ as an interfix is due to the high number of lexemes in *-ariat* within the series of lexemes constructed with the suffix *-at*. The goal of all the operations described above is to better satisfy the output constraints a derivative is submitted to, which include purely phonological or prosodic constraints, but also lexical constraints that guarantee the maximal phonological homogeneity within a morphological family or a morphological series, as in the case of GEEKARIAT.

The radical thus constructed constitutes then the phonological object on which a morphological construction operates. In the line of what has been proposed by Montermini (2018), we consider that this operation corresponds, in fact, to a set of constraints on the form of the outputs of the construction. For instance, we may consider that the exponent of *-at* suffixation in French includes a constraint of the form *-ariat* > *-at*, which states that, all other things being equal, a derivative ending in *-ariat* is preferred over a derivative where *-at* is preceded by another sequence.

### 3 Russian denominal adjectives

Russian denominal adjectives, we claim, constitute a good testing ground for the model described above. In fact, Russian possesses various suffixes in order to derive adjectives from nouns, most of which possess more or less phonologically motivated variants, and which interact in various ways with other derivational affixes (including other denominal adjectival suffixes). Although affixal competition (in the sense of Aronoff 2013) is not the focus of the present work, we acknowledge that it could be an important parameter to be considered. It is likely, in fact, that the selection of exponents has strict interactions with the mechanisms described above. To state it simply, a suffix may be chosen over another because it is more compatible with a specific set of phonological constraints. We reserve this issue for further investigation (cf. however Hénault & Sakhno 2016 on affixal competition in adjectival derivation in Russian).

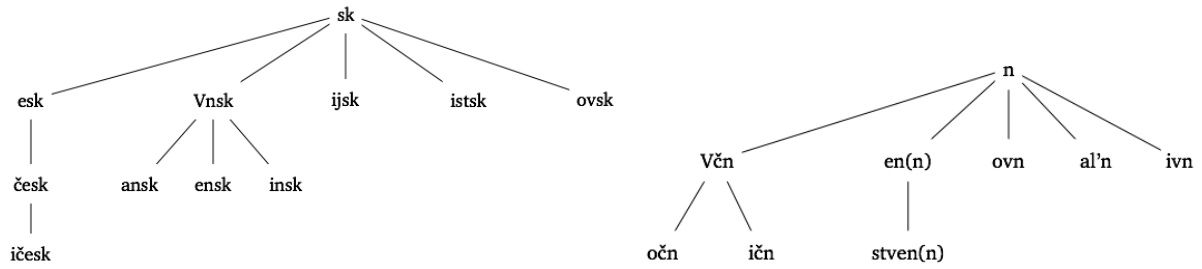
Russian denominal adjectivization constitutes a rich system, with a number of different exponents available, some of which display a high productivity rate. Dictionaries and grammars (for instance Švedova 1980) list a minimum of eight different suffixes, and this number increases to some tens if we include all phonological and morphological variants. Currently, only three suffixes appear to be productive for the construction of adjectives from nouns in Russian: *-ov*, *-sk* and *-n*,<sup>1</sup> for each of which we give an example in (1).

- |     |        |             |   |             |
|-----|--------|-------------|---|-------------|
| (1) | SLON   | ‘elephant’  | ↔ | SLONOV(YJ)  |
|     | SOSED  | ‘neighbour’ | ↔ | SOSEDSK(IJ) |
|     | KOŽ(A) | ‘skin’      | ↔ | KOŽN(YJ)    |

Apart from *-ov*, whose only variation is due to phonological factors (namely the presence / absence of a softened – palatalized – consonant in the base stem), the other suffixes may appear in several variants, and in particular be preceded by various sequences, which have different statuses and origins, but all contribute to the definition of the exponent as a set of constraints, as described above. Figure 1 presents an attempt to formalize the different variants encountered with *-sk* and *-n* which are considered productive in dictionaries and grammars.

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<sup>1</sup> Suffixes are conventionally represented under their ‘bare’ form, without the corresponding inflectional endings; full lexemes are represented in their citation form, with inflectional endings in brackets.



**Figure 1:** attested variants of *-sk* and *-n* suffixes

What we call a ‘variant’ corresponds to a surface form under which the corresponding affix appears in a set of derivatives. In (2) we give some examples of *-sk* derivatives displaying different variants of the suffix:

- (2) DRUG ‘friend’ ↔ DRUŽESK(IJ)  
 OBORON(A) ‘defense’ ↔ OBORONČESK(IJ)  
 OKEAN ‘ocean’ ↔ OKEANIČESK(IJ)

According to the examples above, we might well consider that the three variants in question constitute a hierarchically ordered set of constraints on the form of the output having the following form: *-ičesk* > *-česk* > *-esk* > *-sk*. In its turn, this hierarchy interacts with other hierarchies connected with the same suffix. Crucially, the emergence of one of the variants in the hierarchy allows the derivative to fit some constraints, which may be either purely phonological or lexico-morphological: i) *-esk* appears in particular with palatal stems of lexemes which display ‘hard’ (non-palatalized) stems in their inflectional forms (like in DRUG vs. DRUŽESK(IJ)); ii) *-česk* appears in particular with bases containing specific suffixes or combining forms like *-ec*, *-čik*, *-ved*, etc. (like in PEREVODČIK ‘translator’ ↔ PEREVODČESK(IJ)); iii) *-ičesk* appears in particular in lexemes of foreign origin, and consequently also with lexemes containing specific suffixes / combining forms (e.g. *-ija*, *-izm*, *-ik*, etc.).<sup>2</sup>

The same dynamics combining a hierarchy of preferred forms for a suffixal exponent and an interaction between phonological and morphological factors, including the form of the base, holds, we claim, in all other cases. The examples in (3) illustrate another such case:

- (3) GOSUDARSTV(O) ‘state’ ↔ GOSUDARSTVENN(YJ)  
 BOG ‘god’ ↔ BOŽESTVENN(YJ)  
 UM ‘mind’ ↔ UMSTVENN(YJ)

These cases show the potential autonomy of *-stven(n)* as a variant of *-n*: in the case of GOSUDARSTVENN(YJ), the sequence *-stv* (corresponding to a nominalizing suffix) already appears in

<sup>2</sup> Of course, the sequence *-ič-* has been historically (and is still) used for the adaptation of foreign lexemes in Russian, as are other sequences included in Figure 1 (*-istsk*, *-al'n*, etc.). However, we chose here to give all these forms the same status, regardless of their origin. The data in (2) show precisely the impossibility to distinguish them from ‘native’ Russian forms. Note moreover that some of the sequences in question (*-ič-*, *-ov-*) may precede either *-sk* or *-n*, which suggests that they should probably be attributed an interfix status. The precise status they have has no impact on the analysis we propose, however.

the base. In the case of BOŽESTVENN(YJ), it appears in a lexeme belonging to the same morphological family as the base (BOŽESTV(O) ‘divinity’); here, we observe the same form / meaning mismatch than between PERSONNE, PERSONNEL and PERSONNALISME (see above). Finally, in the case of UMSTVENN(YJ), *-stven(n)* is added to the base as a full variant of the affix (a fact that is probably favoured by the lexicalisation of the ‘simpler’ form UMN(YJ) as a qualifying adjective meaning ‘smart’).

Our analysis will be realized by comparing two datasets extracted from a large corpus of Russian (<http://www.ruscorpora.ru>), one containing the 1,000 most frequent lexemes containing the suffixes mentioned, and a sample of 1,000 lexemes containing the same suffixes and having frequency 1 in the corpus. The comparison between the two datasets will allow to identify the constraints that are active in the productive use of morphological constructions by speakers, and to set them apart to the properties of derived lexemes that should be attributed to lexicalization factors.

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