

## The Inflectional Base(s) of the Russian Imperative

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Previous literature on morphology of the Russian imperative presents a number of contradicting accounts. They differ in what they take to be the base: abstract forms such as the basic stem of the verb (Jakobson 1948) or the present tense stem (Vinogradov 1972:464-5), the 3pl (Zaliznjak 1977:89), the 1sg together with the present tense stem (Švedova 1982:620-1), or some particular two forms of the paradigm.

I test Albright's (2002, 2005) claim that inflectional paradigms in general, as well as the imperative form, may be derived from an existing paradigmatic form. I evaluate various verbal forms as potential bases for imperative formation in Russian to determine which form serves as the best base by applying the Minimal Generalization Learner model (Albright and Hayes 1999) to the database of 1000 most frequent Russian verbs (from Sharov), and compare the results based on number of characteristics, including the percentage of imperatives derived correctly (Fig. 1) and confidence values of the predicted outputs (Fig. 2). The results show that while none of the forms of the verbal paradigm achieves 100% accuracy in predicting the imperative, one form is enough to achieve up to 95% success rate (1sg present) (Fig. 1), (1). This result is initially unpredictable, given the complexity of the Russian verbal paradigm which spans several dimensions, including various stress patterns (mobile vs. fixed) and consonantal mutations in the verbal stem ([k] ~ [tʃ], [s] ~ [ʃ], etc.), not entirely predictable from a single form. I further show that infinitive fares worse in comparison to finite forms, not only in percentage of imperatives predicted correctly, but also in the confidence values assigned to predicted output forms.

I also show that each non-past verb form carries statistically equal informational load, allowing for correct imperative derivation in statistically the same number of cases and none of the paradigm forms can be chosen as superior (1). Therefore the task of learning the imperative is simplified for learners as there is no need to select a single base; also limited input does not present problems for imperative formation: no matter which finite form dominates the learner's input, the imperatives will be acquired with the same success rate.

I extend Albright's model to predict what happens if the learner has access to several bases while trying to generate the imperative. I show that being able to use the rules deriving imperatives from two basic forms simultaneously and to combine the results afterwards produces significant improvement in the accuracy of imperative formation. However, I show that there is no need to resort to more than two forms (2).

I further examine the errors in imperative formation occurring in the speech of learners, such as those shown in (3). I demonstrate that the predictions made by the Minimal Generalization Learner about the problems in the derivation of imperatives are borne out: at the initial stage the imperative exhibits the strongest connection with the infinitive, as the forms found in the speech of child learners are derived from the infinitival form. Later, it shifts away from the infinitive and its connection with the it weakens, while the connection with each of the non-past forms strengthens until all the connections with non-past forms become equal, and it occupies the middle position within the non-past paradigm.

The interesting and unique property of the Russian imperative is that it can be treated as an equilibrium point of the paradigm: while it cannot achieve 100% connections with all of non-past forms at the same time, it can occupy the middle position within the non-past subparadigm when the connections with each of the non-past forms are statistically equal. It is a paradigm member which is attracted by not just one specific form within the paradigm, but equally by all members of the paradigm.

At the conclusion of the paper I provide preliminary results on whether the Albrightian approach of deriving the imperative from free-standing forms is superior to Jakobsonian approach of deriving the imperative from the abstract stem. In order to provide such a comparison, I analyze from quantificational point of view using MGL how easy it is to learn the basic stem, and how easy it is to learn the derivation of the imperative from this stem.

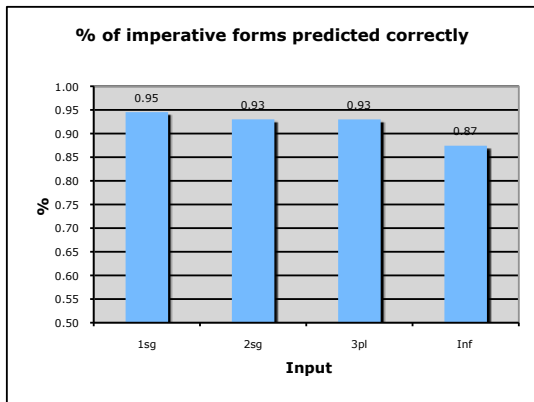


Figure 1. Percentage of imperative forms predicted correctly

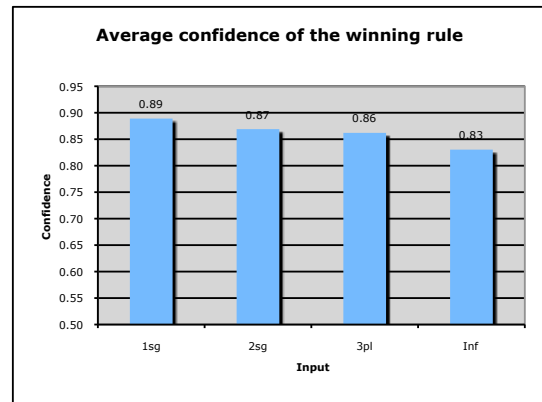


Figure 2. Average confidence values of the winning rule/candidate

- (1) Significant differences in percentage of imperatives derived correctly (Figure 1):  
 1sg > Inf, 2sg > Inf, 3pl > Inf<sup>1</sup>
- (2) Significant differences between using one and two inputs in deriving imperatives:  
 1sg < 1sg+2sg, 1sg+Inf  
 2sg < 2sg+1sg, 2sg+Inf  
 3pl < 3pl+1sg, 3pl+Inf  
 Inf < Inf+1sg, Inf+2sg, Inf+3pl  
 1sg+2sg+3pl+Inf > 1sg, 2sg, 3pl, Inf, 2sg+3pl, but:  
 1sg+2sg+3pl+Inf = 1sg+2sg, 1sg+3pl, 1sg+Inf, 2sg+Inf, 3pl+Inf

(3)	<i>Infinitive</i>	<i>Imperative</i>	<i>Children's form</i>	<i>Gloss</i>
a.	p <sup>h</sup> isát <sup>h</sup>	p <sup>h</sup> iší	p <sup>h</sup> isáj	'write'
b.	pr <sup>h</sup> átat <sup>h</sup> (s <sup>h</sup> a)	pr <sup>h</sup> áč(s <sup>h</sup> a)	pr <sup>h</sup> átaj(s <sup>h</sup> a)	'hide (oneself)'
c.	l <sup>h</sup> izát <sup>h</sup>	l <sup>h</sup> iží	l <sup>h</sup> izáj	'lick'
d.	r <sup>h</sup> isovát <sup>h</sup>	r <sup>h</sup> isúj	r <sup>h</sup> isováj	'draw'

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<sup>1</sup> '>' means that the first form is significantly better at predicting imperative form than the second.