Meaning components in the constitution of Russian verbs: Presuppositions or implicatures? *

Yulia Zinova   Hana Filip
Heinrich Heine University, Düsseldorf   *Heinrich Heine University, Düsseldorf*

Abstract In this paper we discuss the inferences triggered by perfective accomplishments and two verbal prefixes (the completive prefix *do-* and the iterative prefix *pere-*) in Russian. Contrary to most works that attempt to analyze these inferences as presuppositions, we show that there is no ground for such a claim and argue that the inferences discussed here are better analyzed in terms of entailments and scalar implicatures. We use standard tests from previous research on semantic and pragmatic presupposition. For those cases where the standard tests prove to be insufficient, we provide empirical data from a questionnaire we conducted. The methodology used to construct the questionnaire is based on the results of an empirical study by Chemla (2009).

Keywords: aspect, prefixation, presupposition, Russian, scalar implicature

1 Introduction

The semantics of the perfective and imperfective aspects in Slavic languages notoriously raises a number of challenges, given the prevalence of the highly complex and often idiosyncratic form-meaning mappings that characterizes their verbal systems. The main focus of this paper is on common claims about what is taken to be a presupposition of existence on events, that is triggered by verbs, either as whole units or by their parts. Two common claims are explored in depth here: namely, (i) that perfective verbs trigger a presupposition that the initial phase (or the process part) of events denoted by them actually took place (henceforth a *process presupposition*); and (ii) that there is a presupposition that is triggered by specific verbal prefixes and is independent of the grammatical properties of the whole surface verb (and hence this presupposition is compatible with both perfective and imperfective verbs).

The prefixes discussed here are the completive prefix *do-* and the iterative prefix *pere-* that have been claimed to give rise to presuppositions similar to those associated with lexical items like *finish* and *again*, respectively (see Kagan 2012).

The main aim of this paper is to establish that, contrary to most analyses, the inferences at stake here are not semantic presuppositions, but rather are best analyzed as scalar implicatures in negative contexts and questions, and as entailments in affirmative declarative sentences. This hypothesis will be supported by empirical tests allowing us to tease apart presuppositions, entailments and (scalar) implicatures associated with Slavic verbs. In developing our testing methodology, we rely on some results from recent research in the domain of projective content (Schlenker 2008; Chemla 2009; Romoli 2011, and references therein). This methodology provides a new and useful perspective on the analysis of Slavic verbs and, to the best of our knowledge, has never been pursued in the domain of Slavic verbs.

The structure of the paper is as follows: in section 2, we first discuss the evidence in favor of a semantic presuppositional analysis offered in previous Slavic studies. Then we provide a brief overview of an alternative pragmatic approach, proposed by Grønn (2004, 2006). In section 2.3, we apply the classical tests for semantic and pragmatic presupposition to Russian data. We show that the hypothesis about the presuppositional nature of the inference triggered by perfective verbs is only applicable to a subset of perfective predicates, namely perfective accomplishments, rather than to perfectives as a whole class. Moreover,we show that this hypothesis must be rejected. When it comes to the prefixes *do-* and *pere-*, the tests prove to be insufficient because they do not lead to any clear judgments on the part of native speakers. In section 3, we present our proposal and motivate its plausibility. Section 4 is devoted to the online questionnaire we conducted, which provides empirical evidence which supports our proposal in section 3.

2 Presupposition?

2.1 Evidence for a presuppositional analysis

2.1.1 Perfective accomplishments

The claim that perfective verbs trigger the presupposition of existence of the process, or initial, part of events in their denotation has different formulations (see, e.g., Padučeva 1996, 2011; Romanova 2006 for Russian and Dočekal & Kučerová 2009 for Czech, among others). The first problem with this claim has to do with the fact that it is taken to concern the semantics of all perfective verbs (for the most general formulation, see Romanova 2006). However, this claim only makes sense for perfective accomplishments, given that only they denote events with some temporal duration and telos. Hence, perfective accomplishments can be thought

of as consisting of two parts: the process (initial) part and the culmination part. Slavic perfective achievements denote events that are conceived of as punctual, and hence have no proper parts. Predicates of processes and states are expressed by imperfectives. For the discussion of the different kinds of problems that arise with perfectives that do not neatly fit into the accomplishment aspectual class, see Zinova & Filip (2014).

As an example, consider (1). It contains a perfective verb *pročitat'* 'to read through' that denotes (a set of) accomplishments (its imperfective simplex base *čitat'* denotes (a set of) processes). (1) is claimed to presuppose the existence of the process, or the initial, part of events it denotes, i.e.,'Ivan started reading the book' and to assert that the denoted events culminated, i.e., 'Ivan finished reading the book.'

(1)   Ivan pro.čital^{PF} ètu knigu.
        Ivan PREF.read.PAST.3SG this book

        'Ivan read this book completely through.'[1]

Perfective verbs in Russian are commonly formed by means of prefixes from imperfective verbs. Often, adding a prefix leads to a new perfective verb that differs from its imperfective base not only in aspect, but also in lexical meaning. For our purposes, the lexical contribution of the prefix *pro-* to the perfective verb in (1) does not play any significant role, and hence the prefixed perfective verb *pročitat'* will be treated here as forming an aspectual pair (see, e.g., Forsyth 1970) with its imperfective simplex base *čitat'* 'to read.'

Let us first review the evidence provided in the previous studies in favor of presuppositional analysis of the inferences associated with perfective accomplishments. In Padučeva (1996, 2011); Romanova (2006); Dočekal & Kučerová (2009) the existence of the presupposition in question is motivated by the observation that it is preserved under negation, as in (2a), and in questions, as in (2b). From this, it may be concluded that what these authors have in mind is specifically a matter of semantic presupposition.

The sentence in (2a) (the negated variant of (1)) is understood as meaning that Ivan read a part of the book, or started reading it, and as negating the culmination, namely that the whole book was read by Ivan. Similarly, the question in (2b) concerns the issue of whether the reading of this book was finished, but not whether it took place at all.

---

1 The superscripts 'IPF' and 'PF' on a verb stand for the imperfective and perfective aspect. The following abbreviations are used in the glosses: NOM = nominative, GEN = genitive, DAT = dative, ACC = accusative, SG = singular, PL = plural, F = feminine, M = masculine, N = neuter, PRES = present tense, PAST = past tense, INCEP = inceptive, COMP = completive, ITER = iterative, and IMP = imperfective suffix.

(2)   a. Ivan ne pro.čital^{PF} ètu knigu.
          Ivan ɴᴇɢ ᴘʀᴇꜰ.read.ᴘᴀꜱᴛ.3ꜱɢ this book

          'Ivan did not read this book completely through.'
          Inference: Ivan read a part of this book. / Ivan started reading this book.

    b. Ivan pro.čital^{PF} ètu knigu?
          Ivan ᴘʀᴇꜰ.read.ᴘᴀꜱᴛ.3ꜱɢ this book
          'Has/Did Ivan read this book completely through?'
          Inference: Ivan started reading this book (i.e., read a part of this book).

2.1.2   Prefixes: The completive *do-* and iterative *pere-*

The completive prefix *do-* is claimed to behave similarly to the English verb *finish*. For example, Kagan (2012: 63) states, "*finish* and *do-* presuppose that a particular event begins, or takes place partially, and entail that it reaches a certain finishing point." As an illustration, consider the example in (3a). It contains a perfective verb *dočitat'* 'to finish reading,' formed with the completive prefix *do-*. According to Kagan (2012), the sentence in (3a) entails that the whole book was read and presupposes that the event of reading the book took place.

(3)   a. Ivan do.čital^{PF} ètu knigu.
          Ivan ᴄᴏᴍᴘ.read.ᴘᴀꜱᴛ.3ꜱɢ this book

          'Ivan finished reading this book.'

    b. Ivan pere.čital^{PF} ètu knigu.
          Ivan ɪᴛᴇʀ.read.ᴘᴀꜱᴛ.3ꜱɢ this book

          'Ivan reread this book.'

As for the iterative prefix *pere-*, Kagan (2012: 119) states that (3b) "presupposes that Ivan read the book in question before the event time and entails that another reading event took place." Note that the prefix *pere-* has a range of other meanings (e.g., distributive, excessive, 'to cross,' among others, see, e.g., Švedova 1982; Kagan 2012 for the whole list of meanings) that are irrelevant here.

    In support of a presuppositional analysis, Kagan (2012) relies on the negation test. The negation of (3a), shown in (4a), is claimed to presuppose that Ivan read a part of the book and to negate the culmination. The sentence in (4b) is taken to presuppose that Ivan read the book before and negate the existence of the second completed reading event.

    If perfective accomplishments prefixed with the completive prefix *do-* and the iterative prefix *pere-* are tested, as in Kagan 2012 and illustrated by the examples (4a) and (4b), two different phenomena are potentially confounded. Specifically, if

the completive *do-* constitutes a part of a complex perfective verb, its contribution overlaps with the meaning of perfective aspect. In order to eliminate the confounding factor of perfectivity and to get at the semantics of these two prefixes, we need to test them when they occur in imperfective verbs, i.e., when they co-occur with the secondary imperfective suffix and no other prefix(es) on the same verb.

(4)   a. Ivan ne do.čital^{PF} ètu knigu.
            Ivan NEG COMP.read.PAST.3SG this book

            'Ivan did not finish reading this book.'
            Inference: Ivan read a part of this book.

            b. Ivan ne pere.čital^{PF} ètu knigu.
            Ivan NEG ITER.read.PAST.3SG this book

            'Ivan did not reread this book.'
            Inference: Ivan read this book before.

To illustrate that the question about presupposition triggering arises at all in the case of imperfective verbs containing the prefixes *do-* and *pere-*, let us address the examples in (5). As shown, the sentence in (5a) has an inference that the reading of the book started and the sentence in (5b) has an inference that there was a previous event of reading (either completed or not).

(5)   a. Ivan ne do.čityval^{IPF} ètu knigu.
            Ivan NEG COMP.read.PAST.3SG this book

            'Ivan did not finish/was not finishing reading this book.'
            Inference: Ivan read a part of this book.

            b. Ivan ne pere.čityval^{IPF} ètu knigu.
            Ivan NEG ITER.read.PAST.3SG   this book

            'Ivan did not reread/was not rereading this book.'
            Inference: Ivan read/was reading this book before.

2.2   Pragmatic implicature

Grønn (2004, 2006) correctly recognizes that "[t]he negation test in itself is not a sufficient argument for associating perfective accomplishments with a presupposition" (Grønn 2004: 61). Instead, he proposes that the process inference is a matter of pragmatic implicature (Grice 1975).

The account by Grønn (2004, 2006) is based on two main assumptions. First, it relies on the markedness theory of Slavic aspect (Maslov 1958; Jakobson 1971), according to which the imperfective aspect is semantically unmarked, i.e., unspecified with respect to the distinguishing semantic feature of the perfective aspect that is

taken to be the marked member of the aspectual opposition. Second, it integrates pragmatic assumptions related to speaker's and hearer's economy effort in communication, based on "the Gricean idea that the best form-meaning pairs are the ones which minimize both the speaker's and hearer's effort (whose interests are, in a sense, conflicting)" (Grønn 2006: 71). Grønn's idea of aspectual competition can be illustrated with the following examples:

(6)　　a. Ivan ne čital^{IPF}　　ètu　knigu.
　　　　　Ivan ɴᴇɢ read.ᴘᴀsᴛ.3sɢ this book

　　　　　'Ivan did not read this book.'

　　　　b. Ivan ne pro.čital^{PF}　　ètu　knigu.
　　　　　Ivan ɴᴇɢ ᴘʀᴇғ.read.ᴘᴀsᴛ.3sɢ this book

　　　　　'Ivan did not read this book completely through.'　　　　　　= (2a)

The unmarked imperfective (6a) is the default choice of the speaker when the existence of a whole (culminated) event is negated. If the speaker chooses (6b), with the aspectually marked perfective form, instead of the unmarked imperfective one, as in (6a), the hearer infers that there was some attempt or activity on the part of the agent of the described events which did not culminate, because it would have been more economic for the speaker to use the unmarked imperfective, if it were possible/relevant.

　　This account is implemented in Optimality Theory (Blutner 2000) and provides an important contribution to the understanding of aspectual distinction in Russian due to the shift from semantic presupposition to pragmatic analysis.

2.3　Evidence against a presuppositional approach

The account by Grønn (2004, 2006) sheds considerable doubts on the status of the inferences in question as semantic presuppositions. Therefore, in this section, we take a closer look at them, relying on standard tests used in the research on projective meaning to diagnose semantic and pragmatic presuppositions. They will provide evidence that the process inference associated with perfective verbs is not a matter of either semantic or pragmatic presupposition. The same tests will also be applied to test the status of inferences triggered by the completive prefix *do-* and the iterative prefix *pere-*. However, they do not lead to any conclusive results in this case.

2.3.1　Projection out of the antecedents of conditionals

According to theories of presupposition projection, semantic presuppositions project out of the antecedents of conditionals, as in (7b), but scalar implicatures do not (8b).

(7)   a. John didn't win the marathon.
             → John participated in the marathon.

     b. If John won the marathon, he will celebrate tonight.
             → John participated in the marathon.

     c. If John didn't win the marathon, he will not celebrate tonight.
             → John participated in the marathon.

The sentence in (7a) contains a presupposition trigger: the verb *to win*. Under negation, the inference that John participated in the marathon is preserved. It is also preserved when the same trigger is located in the antecedent of a conditional, both in affirmative, as in (7b), or negated, as in (7c), variants.

(8)   a. John didn't read all the books.
             → John read some of the books.

     b. If John read all the books, he will pass the exam.
             ↛ John read some of the books.

     c. If John didn't read all the books, he will fail the exam.
             ↛ John read some of the books.

If, instead of the presupposition trigger *to win*, a scalar item such as *all* is used, the inference under negation, as in (8a), seems to be of the same kind as in (7a). However, examples that involve conditionals reveal the difference between the inferences that arise due to the presuppositional triggers and those that arise due to scalar items. For example, in (8b) and (8c) the inference that John read some of the books no longer projects.

    Now let us turn to Russian data. Example (9) shows that the alleged 'process presupposition' that is claimed to be triggered by perfective accomplishments does not project out of the antecedents of conditionals. Hence it fails to exhibit one of the properties of semantic presupposition.

(9)   Esli Vasja pro.čital^{PF} učebnik, on sdast èkzamen.
        if   Vasja PREF.read.PAST.SG.M textbook, he passes exam

        'If Vasja completely read the textbook, he will pass the exam.'
        ↛ Vasja read/began reading the textbook.

(10)   Esli Vasja včera   do.čityval^{IPF} učebnik, on sdast èkzamen.
        if   Vasja yesterday COMP.read.PAST.SG.M textbook, he pass exam

        'If Vasja finished reading the textbook yesterday, he will pass the exam.'
        ?→ Vasja read at least a part of the textbook.

As far as the prefixes *do-* and *pere-* are concerned, native speakers have no clear intuitions as to whether the alleged inferences in (10) and (11), which are traditionally

taken to be of presuppositional nature, hold. Recall that in order to separate the contribution of prefixes from perfective aspect, we need to test their contribution in imperfective verbs.

(11) Esli Vasja včera pere.čityval^{IPF} učebnik, on sdast èkzamen.
if Vasja yesterday ɪᴛᴇʀ.read.ᴘᴀsᴛ.sɢ.ᴍ textbook, he pass exam

'If Vasja (was) reread(ing) the textbook yesterday, he will pass the exam.'
?→ Vasja read at least a part of the textbook before.

2.3.2 Defeasibility

Semantic presuppositions are generally taken to be non-cancelable. However, the alleged 'process presupposition' of perfective accomplishments can be easily cancelled. Consider the discourse in (12), which is felicitous even though the first sentence is followed by a sentence that denies the 'process presupposition' taken to be associated with it, namely, 'Ivan started reading the book.'

(12) Ivan ne pro.čital^{PF} ètu knigu. On daže ne otkryl eë.
Ivan ɴᴇɢ ᴘʀᴇꜰ.read.ᴘᴀsᴛ.3sɢ this book. he even ɴᴇɢ open.ᴘsᴛ.sɢ.ᴍ it.ᴀᴄᴄ.ꜰ

'Ivan didn't read this book. He did not even open it.'

Again, testing the prefixes *do-* and *pere-* (in imperfective verbs) does not lead to any clear conclusion; the discourses in (13) and (14) are odd, but not as bad as in the case of classic presupposition failure, as in (15).

(13) Ivan ne do.čityval^{IPF} ètu knigu. $^?$On daže ne otkryval eë.
Ivan ɴᴇɢ ᴄᴏᴍᴘ.read.ᴘᴀsᴛ.3sɢ this book. he even ɴᴇɢ open.ᴘᴀsᴛ.sɢ.ᴍ it.ᴀᴄᴄ.ꜰ

'Ivan wasn't finishing / didn't finish reading this book. He did not even open it.'

(14) Ivan ne pere.čityval^{IPF} ètu knigu. $^?$On daže ne otkryval eë.
Ivan ɴᴇɢ ᴄᴏᴍᴘ.read.ᴘᴀsᴛ.3sɢ this book. he even ɴᴇɢ open.ᴘᴀsᴛ.sɢ.ᴍ it.ᴀᴄᴄ.ꜰ

'Ivan wasn't rereading / didn't reread this book. He did not even open it.'

(15) Ivan ne znaet, čto Vasja čital^{IPF} ètu knigu. $^\#$Vasja daže ne čital^{IPF} eë.
Ivan ɴᴇɢ know that Vasja read.ᴘᴀsᴛ.3sɢ this book. Vasja even ɴᴇɢ read it

'Ivan doesn't know that Vasja read this book. $^\#$Vasja didn't even read it.'

2.3.3 Evidence against a pragmatic presupposition: The "Hey, wait a minute!" test

Pragmatic presuppositions are often understood as requirements on the common ground (see e.g., Karttunen 1973; Stalnaker 1973; Shannon 1976; Heim 1983).

Shannon (1976: 248) writes that "[u]pon uttering S, a speaker P pragmatically presupposes Q if it is suitable for the hearer to utter 'One moment, I did not know that Q' in response to S."

The sentence in (16a) with the perfective accomplishment *pročitala* 'she read x completely (through),' pronounced with a neutral intonation, cannot be followed by (16b) which denies its alleged 'process presupposition.' This suggests that it cannot be a matter of pragmatic presupposition. Notice that (16a) can be followed by (16c), showing the validity of the test.

(16) a. Katya pro.čitala^{PF} skazki   Puškina.
      Katya PREF.read.PAST.SG.F fairy tales Pushkin.GEN

      'Katya read the fairy tales by Pushkin completely through.'

    b. #Pogodi-ka! Ja ne znal, čto ona ix   čitala^{IPF} !
      wait!   I   NEG knew that she them read

      'Wait a minute! I didn't know that she was reading them!'

    c. Pogodi-ka! Ja ne znal, čto ona umeet čitat'^{IPF} !
      wait   I   NEG knew that she can   read

      'Wait a minute! I didn't know that she can read!'

As for the verbs prefixed with the completive prefix *do-*, the inference introduced by the prefix does not have the properties of the pragmatic presupposition either, as the sentence in (17a) cannot be followed by the hearer uttering the sentence in (17b). Again, it is natural for the hearer to utter (16c) after he hears (17a).

(17) a. Katya do.čityvaet^{IPF} skazki   Puškina.
      Katya COMP.read.PRES.SG.F fairy tales Pushkin.GEN

      'Katya is finishing reading the fairy tales by Pushkin.'

    b. #Pogodi-ka! Ja ne znal, čto ona ix   čitala^{PF} !
      wait!   I   NEG knew that she them read

      'Wait a minute! I didn't know that she was reading them!'

(18) a. Katya sejčas pere.čityvaet^{IPF} skazki   Puškina.
      Katya now   ITER.read.PRES.SG.F   fairy tales Pushkin.GEN

      'Katya is now rereading the fairy tales by Pushkin.'

    b. $^{?}$Pogodi-ka! Ja ne znal, čto ona ix   čitala^{IPF} !
      wait!   I   NEG knew that she them read

      'Wait a minute! I didn't know that she was reading them!'

More complications arise with verbs prefixed with the iterative prefix *pere-*. In (18), the hearer's reaction (18b) is slightly odd, but it is more felicitous than the reaction

of the hearer in (17b) (in the pair (17a) and (17b), which tests the contribution of the prefix *do*-). However, the acceptability is much lower with some other verbs prefixed with the iterative *pere*-, as in (19a). In this case, the hearer's reaction in (19b) is inappropriate.

(19)   a. Katya sejčas pere.delyvaet^{IPF} domašneje zadanije.
        Katya now   ITER.do.PRES.SG.F   homework.ACC

       'Katya is now redoing the homework.'

    b. #Pogodi-ka! Ja ne znal, čto ona ego delala^{IPF}!
       wait!   I NEG knew that she him did

       'Wait a minute! I didn't know that she did it!'

2.4   Summary

Based on the tests presented in this section we are led to the conclusion that the putative 'process presupposition' that is claimed to be triggered by perfective accomplishments is not a matter of semantic or pragmatic presupposition.

It is therefore plausible to explore the proposal by Grønn (2004, 2006) that the inference associated with perfective accomplishments is better viewed as a pragmatic phenomenon and analyzed in terms of an implicature. This then raises the question of which kind of implicature exactly is involved here. The rest of the paper focuses on establishing that it is scalar implicature in questions and under negation, and entailment in affirmative sentences.

As for the inferences triggered by the prefixes *do*- (completive) and *pere*- (iterative), standard diagnostic tests for semantic and pragmatic presuppositions do not lead to any reliable results. Therefore, another testing strategy is needed in order to find out whether these inferences are of a presuppositional nature. If we are correct in arguing that perfective accomplishments are not associated with a presupposition of the existence of the process (or initial) part of events they denote, then it should, strictly speaking, no longer be necessary to attempt to eliminate interference of perfective aspect. Nevertheless, in order to get the most reliable results, in our questionnaire, we tested prefixes *do*- and *pere*- in secondary imperfective verbs and only tested them in perfective verbs if the corresponding secondary imperfective verb form with an episodic interpretation is not available due to the idiosyncrasies of Russian verbal morphology.

perfective verb (accomplishment)	$>_{INF}$	imperfective
pro.čitat'^{PF} 'to read completely through'	$>_{INF}$	čitat'^{IPF} 'to read'
rešit'^{PF} 'to solve'	$>_{INF}$	rešat'^{IPF} 'to solve'

Table 1   Informational strength of perfective accomplishments and their imperfective counterparts

3   Proposal: Scalar implicature

3.1   Perfective accomplishments

Perfective accomplishments and their imperfective counterparts can be thought of as being linearly ordered by their degree of informativeness or semantic strength. Intuitively, the relevant scalar implicature can be derived in the following way:

  i. Perfective accomplishments have in their denotation only those events that have culminated. Imperfective verbs can refer to either culminated events or events that have started but have not reached their culmination. As the first set of events is smaller than the second one, in affirmative declarative sentences, a perfective verb is more informative than the corresponding imperfective verb and thus presents a stronger alternative.

  ii. If a sentence headed by a perfective accomplishment holds true, then a sentence with a corresponding imperfective verb must also, given that the process part of the lexical structure of that perfective verb corresponds to the process part of its imperfective counterpart.

Table 1 shows that perfective accomplishments are informationally stronger than the corresponding imperfective verbs. This holds true of all perfective accomplishments, regardless of whether they are prefixed or not.

Under negation, the scale is reversed, as we see in Table 2. Now, imperfective negated verbs are informationally stronger than perfective ones. The reason for this is that generally when a primary (i.e., simplex, or basic) imperfective verb is negated, it denies the existence of a whole event, while the corresponding perfective accomplishment under negation entails the negation of the culmination phase of the described events, but not necessarily the initial (process) part.

3.2   The completive prefix *do-* and the iterative prefix *pere-*

Table 3 illustrates the fact that a sentence with an imperfective verb formed with the prefix *do-* is informationally stronger than the corresponding sentence headed by a

negated perfective	$<_{INF}$	imperfective
ne pro.čitat'^{PF} 'to not read completely through'	$<_{INF}$	ne čitat'^{IPF} 'to not read'
ne rešit'^{PF} 'to not solve/be solving'	$<_{INF}$	ne rešat'^{IPF} 'to not solve'

Table 2 Informational strength of perfective accomplishments and their imperfective counterparts under negation

secondary imperfective with *do-*[2]	$>_{INF}$	non prefixed imperfective
do.čityvat'^{IPF} 'to finish/be finishing reading'	$>_{INF}$	čitat'^{IPF} 'to read'
do.delyvat'^{IPF} 'to finish/be finishing doing'	$>_{INF}$	delat'^{IPF} 'to do'

Table 3 Informational strength of verbs containing the completive prefix *do-* and simplex verbs

basic (root) imperfective verb. In fact, the former entails the latter.

A sentence with an imperfective verb formed with the iterative prefix *pere-* entails that there is at least one previous event of the same kind (as the verb is imperfective, this can be also a partial event). Hence, it entails the corresponding sentence with a basic (root) imperfective verb, and is thus informationally stronger. This is shown in Table 4.

Finally, Table 5 shows that under negation, the scale is reversed. When a secondary imperfective verb that contains the completive prefix *do-* is negated, the scope of negation is either the whole event or its culmination, or final part; when a secondary imperfective verb that contains the iterative prefix *pere-* is negated, the scope of negation is the existence of either the whole event or its iteration. On the other hand, the negation of a basic (root) imperfective verb is always the denial of the existence of any part of the event. Thus, under negation a basic imperfective verb represents a stronger alternative then a secondary imperfective one.

In sum, a negated secondary imperfective verb that contains the prefix *do-* or the iterative prefix *pere-* is the weaker alternative under negation. If the speaker uses the weaker alternative, by the maxim of quantity (Grice 1975) the hearer infers that the stronger alternative, the sentence with a corresponding negated basic (root) imperfective verb (with no prefixes attached) does not hold. This amounts to the inference that at least the 'process' subpart (but not the 'culmination' subpart) of the denoted events took place.

In sum, a perfective verb that denotes accomplishments and contains one of the prefixes in question (*do-* or *pere-*) is informationally stronger than the corresponding

---

2 Generic (habitual) uses/meanings of secondary imperfectives are not considered here.

secondary imperfective with iterative *pere-*	$>_{INF}$	non prefixed imperfective
pere.čityvat'^{IPF} 'to reread/be rereading'	$>_{INF}$	čitat'^{IPF} 'to read'
pere.delyvat'^{IPF} 'to redo/be redoing'	$>_{INF}$	delat'^{IPF} 'to do'

Table 4   Informational strength of verbs containing the iterative prefix *pere-* and simplex verbs

negated secondary imperfective with iterative *pere-* or completive *do-*	$<_{INF}$	non prefixed imperfective
ne do.čityvat'^{IPF} 'to not (be) finish(ing) reading'	$<_{INF}$	ne čitat'^{IPF} 'to not read'
ne pere.čityvat'^{IPF} 'to not (be) reread(ing)'	$<_{INF}$	ne čitat'^{IPF} 'to not read'
ne do.delyvat'^{IPF} 'to not (be) finish(ing) doing'	$<_{INF}$	ne delat'^{IPF} 'to not do'
ne pere.delyvat'^{IPF} 'to not (be) redo(ing)'	$<_{INF}$	ne delat'^{IPF} 'to not do'

Table 5   Informational strength of verbs containing the prefixes *do-* or *pere* and simplex verbs: negation

secondary imperfective verb containing the same prefix as well as its imperfective simplex base (this follows from the general statement about the information conveyed by perfective and imperfective verbs), while at the same time, secondary imperfectives are informationally stronger than their imperfective roots: *basic imperfective verb (V) $<_{INF}$ secondary imperfective verb ($PREF_i$+V+iva) $<_{INF}$ prefixed perfective verb ($PREF_i$+V).*

3.3   Testing the scalar properties of the completive prefix *do-* and the iterative prefix *pere-*

As has been observed above, the standard diagnostics for semantic and pragmatic presuppositions fail to give us any clear results for the alleged presuppositional properties of the completive prefix *do-* and the iterative prefix *pere-*. Therefore, other tests are needed. We have developed a testing methodology that seems useful for this purpose. It builds on the study by Chemla (2009), who proposed an experimental design aimed at distinguishing the projection properties of presuppositions from those of scalar implicatures, capitalizing on the insights of the presupposition projection theories (e.g., Heim 1983; Schlenker 2008 and references therein). For our purposes, among the most relevant insights of Chemla (2009) are those that concern different types of inferences of sentences that are embedded under the universal quantifiers *every/each* and *no*.

   One of the main results obtained in Chemla 2009 is that presuppositions project

universally rather than existentially when triggered from the scope of the universal quantifiers *every* and *no*. Inferences that project universally from the scope of *every* and existentially from the scope of *no* are akin to scalar implicatures. Stated more formally, if a sentence *S* with the presupposition $P(x)$ is embedded under the universal quantifiers *every* or *no*, the presupposition of the resulting sentence is universal: $\forall x : P(x)$. This means that the presupposition is the same in sentences with universal assertion (*every*) and universal negation (*no*). However, this property does not hold for scalar implicatures. It follows from the procedure of deriving scalar implicatures that if a sentence S entails that if a sentence *S* entails that $I(x)$, then *S* embedded under *every* entails that $\forall x : I(x)$ (universal inference) and *S* embedded under *no* implicates that $\exists x : I(x)$ (existential inference).

Note that the examples we will be interested in are those that involve *indirect scalar implicatures*. Direct scalar implicatures are cases when, e.g., a sentence that contains *some* is understood as negating a stronger alternative with *all*. Indirect scalar implicatures are implicatures which arise when, e.g., a sentence with *all* is understood as negating an alternative with *some*. As an example, consider the sentence (20a). It implicates the sentence in (20b). Now if a sentence with *all* is embedded under the universal assertion, as in (20c), it implicates (20d).

(20)   a. John read all books.   = (13) in Chemla 2009

       b. John read some of the books.

       c. Each student read all the books.   = (14) in Chemla 2009

       d. Each student read some of the books.

In order to proceed with the derivation of a scalar implicature in cases in which a scalar item is embedded under the universal negation, let us first illustrate the reasoning that motivates an indirect scalar implicature in a non-embedded negated case. We will use as an example the sentence in (21a) (taken from Chemla 2009). This sentence involves a strong scalar item *all* in a downward entailing context (here negation).

(21)   a. John didn't read all the books.   = (12) in Chemla 2009

       b. Alternative: John didn't read any of the books.

       c. Scalar implicature: John read some of the books.

The scalar implicature (21c) of (21a) is derived as follows (following suggestions in Grice 1975; Ducrot 1969; Horn 1972, among others). Sentences with *all*, as in (21a), and *any*, as in (21b), belong to a set of linguistic alternatives of the same grammatical category, which can be arranged in a linear order by degree of informativeness. The sentence in (21b) is a logically stronger alternative to (21a). If the cooperative and well-informed speaker does not use (21b), the most natural explanation is to

conclude that the alternative, (21b), is false. The negation of (21b), 'It is not the case that John didn't read any of the books,' is the indirect scalar implicature (21c) of (21a) (the two negations cancel each other out).

Similar reasoning works for deriving the scalar implicature (22c) from the sentence (22a); the alternative in (22b) is negated, as it is stronger and was not uttered, corresponding to the inference in (22c).

(22)   a. No student read all the books.   = (18) in Chemla (2009)

b. *Alternative*: No student read any book.

c. *Scalar implicature*: At least one student read some of the books.

4   The empirical study

Following the results and suggestions in the study by Chemla (2009), we designed a new test for distinguishing between presuppositions and scalar implicatures triggered by Russian verbs. The idea is to embed sentences that contain inferences of an unknown nature under negative universal quantifiers and use a questionnaire to ascertain whether the resulting sentences have universal or existential inferences. From what has been said in section section 3.3, it follows that in the case of such an embedding, if the inference of the resulting sentence is universal, the embedded sentence contains a presupposition trigger; if, on the other hand, the inference is existential, the embedded sentence involves a scalar implicature.

Let us consider one Russian example. The sentence in (23a) contains a verb with the completive prefix *do-* that is traditionally claimed to be a presupposition trigger, and a universal negation *nikto* 'nobody.' The alternative sentence that the speaker could have uttered is presented under (23b). It differs from the sentence in (23a) by the absence of a prefix on the verb (the aspect stays the same). This alternative sentence, as follows from Table 5, is informationally stronger than the one in (23a).

(23)   a. Nikto   iz nas ne do.čityval^{IPF} učebnik.
       nobody of us   NEG COMP.read   textbook
       'None of us finished/was finishing reading the textbook.'

b. Nikto   iz nas ne čital^{IPF} učebnik.
       nobody of us   NEG read   textbook
       'None of us read [a part of] the textbook.'

Now, there are two possible inferences that (23a) may have: the existential inference (24a) that corresponds to the hypothesis that it is a scalar implicature, and the universal inference (24b) that is in line with its presuppositional nature.

In order to establish the nature of inferences in sentences like in (23a), we ran an online questionnaire. The experimental design was similar to the one used in

Chemla 2009: we provided participants with two sentences in each trial and asked them to judge if the first one suggests [3] the second one. Respondents were supposed to assume that the first sentence was uttered by a reliable, honest and well-informed speaker [4] in order to establish a natural context in which Grice's maxims can be applied.

(24) a. Kto-to   iz   nas čital^{IPF} učebnik.
     somebody from us   read   textbook

    'Some of us read [at least a part of] the textbook.'   *scalar implicature*

   b. Vse iz   nas čitali^{IPF} učebnik.
     all   from us   read   textbook

    'All of us read [at least a part of] the textbook.'   *presupposition*

As the task of determining whether a particular inference holds can be very difficult in some cases, we allowed our respondents to choose not only one of the two variants "yes" and "no," as was done in Chemla 2009, but also "probably yes" and "probably no." Consequently, we used a 4 point scale, effectively preventing the respondents from selecting the middle variant in difficult cases.

Afterward, the answers were assigned numeric values and mean values were calculated, with the following correspondences between the answers and the numerical values: "yes" was rated as 4, "probably yes" as 3, "probably no" as 2, and "no" as 1. The questionnaire was answered by 140 respondents. It had 4 lists (one participant answered only one list), and there was a minimum of 26 respondents per list. Each list contained 40 trials: 20 fillers and 20 test sentence pairs.

As for the data, we used two groups of control items and two groups of test items. The first group of control items involved sentences with presupposition triggers embedded under universal quantifiers: 10 sentences with the classic presupposition trigger *know* and 16 with different types of possessive pronouns. The second group of control items contained 26 pairs of sentences where the second member of the pair was either true or false (also including "pragmatically true/false" ones). The sentences of this group received the resulting ratings of 3.6 and 1.1 points respectively, which shows that those control items were evaluated correctly. The tested items included 38 pairs of sentences with verbs prefixed with *pere-* and 20 pairs of sentences with verbs prefixed with *do-*.

A few illustrative examples of sentences we used in the questionnaire are given in (25–27). Among the sentences headed by verbs prefixed with *do-* and *pere-* and embedded under negative universal quantifiers were pairs like in (25) and (26). Notice that they are analogous to examples (12) and (18) taken from Chemla

---

3 in Russian instructions *predpolagaet*.
4 in Russian instructions *nadežnyj, iskrennij i informirovannyj sobesednik.*

2009. In the questionnaire, each participant was presented with only one of the tested inferences (either universal or existential inference); different inferences were distributed over different lists.

(25) Nikto iz nas ne do.edal^{IPF} "kašu moločnuju."
none of us NEG COMP.eat.PST.SG.M porrige milk

'None of us were finishing the milk porridge.'
Tested inferences:

a. Vse probovali kašu.
'Everyone tried the porrige.'

b. Kto-to proboval kašu.
'Some of us tried the porridge.'

(26) Nikto ne pere.delal^{PF} rabotu.
Nobody NEG ITER.do.PST.SG.M work

'No one has redone the work.'
Tested inferences:

a. Vse sdelali rabotu ranee.
'Everyone did the work before.'

b. Kto-to sdelal rabotu ranee.
'Some did the work before.'

One example of a pair of control sentences where the first sentence includes a presupposition trigger *znat'* 'to know' embedded under a negative universal quantifier is given in (27).

(27) Nikto is studentov ne znal, čto prepodavatel postavit im začët
None of students NEG know.PST.SG.M that lecturer put.PRES.3SG them credit
"avtomatom."
automatically

'None of the students knew that the lecturer was going to give them the credit automatically.'
Tested inferences:

a. Vsem studentam postavjat začët "avtomatom."
'All of the students will receive the credit automatically.'

b. Nekotorym studentam postavjat začët "avtomatom."
'Some of the students will receive the credit automatically.'

The main results of the questionnaire are given in Figure 1[5]. It turned out that there is no statistically significant difference between the acceptance rates of universal

---
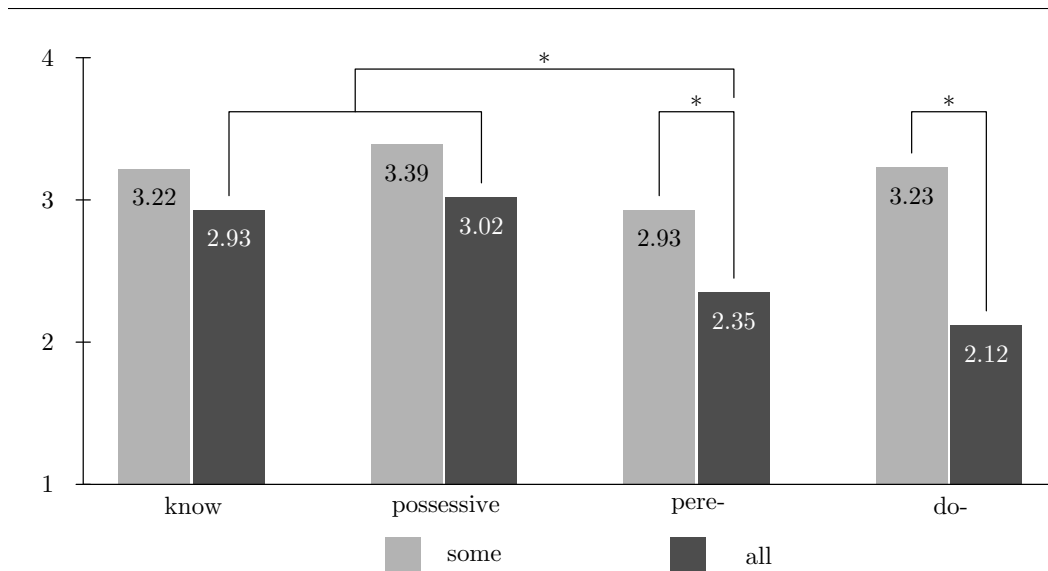
5 Asterisks indicate significant difference.

Figure 1   Questionnaire results

and existential inferences in case of the presupposition trigger *znat'* 'to know' and posessive pronouns, which is in line with results obtained in Chemla 2009. There is, however, a statistically significant difference in the acceptance rate of universal and existential inferences in case of test items of both categories: those involving the verb with the completive prefix *do-* and those with the verb prefixed with the iterative *pere-* (t-test, p<0.001 in both cases). As for the existential inferences, the answers ranged from "yes" to "probably no" and for the universal inferences, from "probably yes" to "no." Furthermore, the difference between the acceptance rates in control and test sentences for existential inferences was not significant, while the difference for universal inferences was (t-test, p<0.001).

All the results strongly suggest that the inferences triggered by the completive prefix *do-* and the iterative prefix *pere-* are not of a presuppositional nature. On the other hand, the observed behavior is compatible with a scalar implicature analysis.

5   Conclusion

The standard tests for semantic and pragmatic presuppositions show that inferences triggered by the perfective aspect of accomplishments do not behave like semantic or pragmatic presuppositions.

As for the inferences triggered by prefixes *do-* and *pere-*, standard tests could not be used as evidence for or against presuppositional analysis, and therefore a

new testing method is proposed: a questionnaire based on results of experimental work by Chemla (2009). The projection properties of Russian verbs containing prefixes *do-* and *pere-* in downward entailing contexts (under the universal quantifier *no*) indicate that the projected inference behaves more like scalar implicature than presupposition.

References

Blutner, Reinhard. 2000. Some aspects of optimality in natural language interpretation. *Journal of Semantics* 17(3). 189–216.

Chemla, Emmanuel. 2009. Presuppositions of quantified sentences: Experimental data. *Natural Language Semantics* 17(4). 299–340. doi:10.1007/s11050-009-9043-9.

Dočekal, Mojmır & Ivona Kučerová. 2009. Bound ability readings of imperfective verbs: A case for presupposition. In *Sborník z konference Czech in Formal Grammar*, 39–50.

Ducrot, Oswald. 1969. Présupposés et sous-entendus. *Langue Française* 4. 30–43.

Forsyth, James. 1970. *A Grammar of Aspect: Usage and Meaning in the Russian Verb*. Cambridge University Press.

Grice, Herbert P. 1975. Logic and conversation. In P. Cole & J. L. Morgan (eds.), *Syntax and Semantics 3: Speech acts*, 41–58. New York: Academic Press.

Grønn, Atle. 2004. *The semantics and pragmatics of the Russian factual imperfective*. Faculty of Arts, University of Oslo. doi:10.1007/s11185-006-0703-9. Ph.D. dissertation.

Grønn, Atle. 2006. Information structure and aspectual competition. In C. Piñon B. Gyuris, L. Kalman & K. Varasdi (eds.), *The Ninth Symposium on Logic and Language*, 70–77. Budapest.

Heim, Irene. 1983. On the projection problem for presuppositions. In D. Flickinger M. Barlow & M. Wescoat (eds.), *West Coast Conference on Formal Linguistics*, 114–125. Stanford. Reprinted as Heim 2002, pages 249–260.

Heim, Irene. 2002. On the projection problem for presuppositions. In *Formal Semantics*, 249–260. Blackwell Publishers Ltd. doi:10.1002/9780470758335.ch10.

Horn, Laurence Robert. 1972. *On the semantic properties of logical operators in English*. UCLA. Ph.D. dissertation.

Jakobson, Roman. 1971. *Selected writings. 2. Word and language*. Mouton de Gruyter.

Kagan, Olga. 2012. Scalarity in the verbal domain: The case of verbal prefixation in Russian. Book manuscript, Ben-Gurion University of the Negev.

Karttunen, Lauri. 1973. Presuppositions of compound sentences. *Linguistic Inquiry* 4. 167–193.

Maslov, Jurij Sergeevič. 1958. *Rol' tak nazyvaemoj perfektivacii i imperfektivacii v processe vozniknovenija slavjanskogo vida [The role of so-called perfectivization and imperfectivization in the process of emergence of the Slavic aspect]*. Izdatel'stvo Akademii nauk SSSR.

Padučeva, Elena Viktorovna. 1996. *Semantičeskie issledovanija: Semantika vremeni i vida v russkom jazyke; Semantika narrativa [Semantic Studies: The Semantics of Tense and Aspect in Russian; The Semantics of Narrative]*. Moscow: Škola "Jazyki Russkoj Kultury".

Padučeva, Elena Viktorovna. 2011. Prezumpcija [Presupposition]. In *A project of corpora-based description of Russian grammar [Proekt korpusnogo opisanija russkoj grammatiki]*, http://rusgram.ru.

Romanova, Eugenia. 2006. *Constructing perfectivity in Russian*. University of Tromsø. Ph.D. dissertation.

Romoli, Jacopo. 2011. The presuppositions of soft triggers are not presuppositions. In A. Chereches N. Ashton & D. Lut (eds.), *Proceedings of Semantics and Linguistic Theory (SALT) 21*, 236–256. CLC Publications.

Schlenker, Philippe. 2008. Be articulate: A pragmatic theory of presupposition projection. *Theoretical Linguistics* 34(3). 157–212. doi:10.1515/thli.2008.013.

Shannon, Benny. 1976. On the two kinds of presuppositions in natural language. *Foundations of Language* 14. 247–249.

Stalnaker, Robert. 1973. Presuppositions. *Journal of Philosophical Logic* 2(4). 447–457.

Švedova, Natalja Jurjevna. 1982. *Russkaja Grammatika*, vol. 1. Moscow: Nauka.

Zinova, Yulia & Hana Filip. 2014. Scalar implicatures of Russian verbs. *Formal Approaches to Slavic Linguistics (FASL) 23, 02-04 May 2014*. UC Berkeley, California, US.

Yulia Zinova
Collaborative Research Center 991
Research Project A02
Heinrich-Heine-Universität Düsseldorf
Universitätsstr. 1
40225 Düsseldorf
Germany
zinova@phil.hhu.de

Hana Filip
Abteilung für Allgemeine Sprachwissenschaft
Institut für Sprache und Information
Heinrich-Heine-Universität Düsseldorf
Universitätsstr. 1
40225 Düsseldorf
Germany
filip@phil.hhu.de