Russian Scope Freezing: Novel Evidence and Account[*]

Svitlana Antonyuk
Stony Brook University

In this paper I examine a phenomenon of quantifier scope freezing, familiar from English (Larson 1990, Bruening 2001, i.a.) and argue, on the basis of novel data from Russian, that the latter exhibits the same scope freezing effects. Moreover, I show that the considerably broader range of scopally frozen contexts in Russian not only makes existing accounts of scope freezing difficult to extend to the Russian data, it also arguably provides an important insight into what causes scope freezing in the first place, thus, dramatically limiting the space of possible accounts of the phenomenon. I propose an account of scope freezing that is crucially based on the insights drawn from the Russian data and tentatively suggest that this account can provide a viable alternative to current accounts of scope freezing found in such diverse languages as English and Japanese.

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1   Relevant Facts about English Scope Freezing

Despite earlier characterizations of Russian as a mostly scope rigid language allowing only local, interpretability-driven QR (Ionin 2001/2003), recent research converges on the conclusion that Russian is in fact comparable to English in terms of Quantifier Scope and the operation of Quantifier Raising, and thus can no longer be considered a "scope rigid language" (Antonyuk 2006, Antonyuk 2015, Ionin and Luchkina (this volume), Zanon 2015, i.a.). However, although English is a scope fluid language, certain contexts are known to make inverse scope relations difficult to inaccessible. Lebeaux, as cited in Larson 1990, notes that the double object construction (DOC) appears to "freeze" scope in this way[1]. Thus, whereas an English prepositional dative like (1a) allows either the direct object or the prepositional object to take wider scope, (1b) requires the scope to follow the surface order, i.e. $\exists > \forall$. The difference in scope possibilities becomes particularly notable in pairs like (2), where we insert the modifier *different*, which requires a wider scope quantifier to distribute beneath. Presence of *different* forces the wide scope universal reading in (2a), but yields unacceptability in (2b), presumably because a wide scope reading is unavailable.

(1) a.   The teacher gave **a book** to **every student**.   ($\exists > \forall$, $\forall > \exists$)
    b.   The teacher gave **a student every book**.   ($\exists > \forall$, *$\forall > \exists$)
(2) a.   The teacher gave **a different book** to **every student**. ($\forall > \exists$)
    b.   #The teacher gave **a different student every book**. (*$\forall > \exists$)

Larson (1990) also proposed that the scope contrast observed in the *spray-load* alternation exhibited in (3) below (first noted in Schneider-Zioga 1988), is an instance of the same phenomenon. Thus, while the locative variant (3a) is ambiguous, just like the prepositional dative (1a), the *with*-variant in (3b) allows surface scope only, just like the double object form (1b).

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[1] An anonymous reviewer observed that scope rigidity in English double object constructions was first noted in Aoun and Li (1989), predating Larson (1990), and that spray-load alternation is also discussed in Aoun and Li (1993).

(3) a.   Maud draped a (different) sheet over every armchair.   ($\forall > \exists$)
    b.   Maud draped a (#different) armchair with every sheet.   (*$\forall > \exists$)

As further noted by Larson (1990, ft. 10), the inability of the outer quantifier in the double object and the related *with* variant of the *spray-load* construction to move is relative rather than absolute. This is demonstrated by the following observations. First, double object structures show Antecedent-Contained Deletion in the outer quantified object phrase:

(4) a.   John gave someone [everything that Bill did [$_{VP}$ e]].
    b.   Max wants to give someone [everything that you do [$_{VP}$ e]].

As argued in analyses of ACD put forth in Sag 1976, May 1985, and Larson and May 1990, reconstruction of the deleted VP requires the quantified DP to have scope at least as wide as the VP serving as the reconstruction source. This entails that in (4a) *everything that Bill did e* must scope at least as high as the VP headed by *give*, and in (4b) *everything that you do e* must scope as high as the VP headed by *want*. Without such QR, the sentence in (4b), for instance, would not be able to receive its correct interpretation, 'Max wants to give someone everything you want to give them'. Second, Larson also shows that outer objects in the double object construction are able to interact with the higher intensional predicate yielding *de dicto*/*de re* ambiguities[2]:

(5)   I promised to rent someone every apartment in the building.

Thus, *every apartment in the building* can be read opaquely (*de dicto*) or transparently (*de re*) with respect to the predicate *promise*. On the former reading, the promise is to rent someone each and every apartment in the building, whatever they are and however many there are. On the latter, for every given apartment, I made a promise to rent that apartment to

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[2] A reviewer objects to the use of sentences such as (5) and (16) involving a *de dicto*/*de re* distinction, arguing that "it is not at all clear that *de re* readings can be identified with high scope with respect to an intensional operator", citing, in particular, recent work by Keshet and Schwarz (2014). For now, I will keep these examples and leave it to the readers to decide whether they find these examples convincing in light of the above.

someone. Incidentally, Larson notes, the sentence exhibits the scopal properties familiar from the double object contexts: thus, if *every apartment* is interpreted *de re*, *someone* must be interpreted *de re* as well. As is standard to assume, the *de re* interpretation is derived via assigning wide scope to the relevant QP relative to the intensional predicate, which requires the QP in question to undergo QR above the predicate. As Larson (1990) stresses, such results point to the conclusion that the scope freezing effect in the DOC, which restricts the scope of the outer object, is relative, meaning the scope of the outer object is restricted with respect to the inner object, but not restricted otherwise[3],[4].

2   Scope Freezing in Russian: the General Picture

Given recent research results on Russian QP scope (e.g., Antonyuk 2006, 2015) one might expect, *ceteris paribus*, that the Russian equivalent of the double object construction should show essentially the same scope freezing behavior found in English. And indeed, the scope parallelism exhibited between Russian and English extends to ditransitives.

2.1   *Frozen Scope in Russian: Evidence from Ditransitives*
Russian ditransitive verbs represent a rather broad class of predicates, some of which can take two case-marked arguments, such as (6a,b), with the direct object marked with Accusative and the indirect object marked with Dative case[5]:

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[3] For further syntactic evidence of the relative nature of scope freezing in English and in Russian, see Bruening (2001) and Antonyuk (2015) respectively. All the data on scope freezing in Russian discussed here are novel, first presented in Antonyuk (2015) and published for the first time in this volume.
[4] For syntactic tests (such as the Pair-List test) supporting the conclusion that scope is indeed frozen between the two object QPs in a DOC, see Bruening (2001). The tests employed by Bruening yield the same results when applied to the Russian data; however, the tests themselves are given a different theoretical explanation in Antonyuk (2015); still, they are shown to be a robust indicator of scope freezing.
[5] For reasons of space, in what follows I will provide only one example of each sentence type under discussion. To verify that the results described here are quite general, see Antonyuk (2015) where numerous examples are provided.

(6) a. Učitel'   predložil kakuju-to knigu   každomu
       teacher$_{NOM}$ offered   some   book$_{ACC.FEM}$ every
       studentu.
       student$_{DAT.MSC}$
       'The teacher offered some book to every student.'
       ($\exists > \forall$, $\forall > \exists$)
   b. Učitel'   predložil kakomu-to studentu   každuju
       teacher$_{NOM}$ offered   some   student$_{DAT.MSC}$ every
       knigu.
       book$_{ACC.FEM}$
       'The teacher offered some student every book.'
       ($\exists > \forall$, *$\forall > \exists$)

The general point to note about the above example and others like it is that while the (a) example above allows for both surface and inverse scope interpretations, the (b) example categorically disallows inverse scope. Thus, the above scope facts provide initial justification for unifying Russian ditransitives such as (6a,b) above with the English PP Datives and Double Object Constructions respectively[6].

2.2 Frozen Scope in Russian: Evidence from the Russian Spray-Load Alternation

Larson (1990) proposed that the scope contrast observed in the *spray-load* alternation (provided in (3) above) is an instance of the same phenomenon exemplified by the double object and the prepositional dative constructions. Given the initial evidence for the parallelism with respect to quantifier scope and scope freezing between English and Russian, we might ask whether similar facts hold of the *spray-load* alternation in Russian. In fact, scope facts fully parallel to those found in the English *spray-load* alternation hold in the Russian sentence pairs such as (7) as well[7].

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[6] See Pereltsvaig 2006 for arguments in favor of equating Russian ditransitives with the English double object construction.

[7] The Russian *spray-load* construction has also been discussed in Partee 2005, Dudchuk 2006 and Tsedryk 2009; however, none of these authors have noted that the Russian construction demonstrates scope freezing that is identical to the English counterpart.

(7) a.   Vanja   zagruzil   kakoe-to   seno   na každyj gruzovik.
        Vania   loaded   some   hay$_{ACC}$ on every   truck$_{ACC}$
        'Vania loaded some hay on every truck.'   ($\exists > \forall, \forall > \exists$)
   b.   Vanja   zagruzil   kakoj-to gruzovik každym   vidom.
        Vania   loaded   some   truck$_{ACC}$ every   type$_{INSTR}$
        sena
        of hay
        'Vania loaded some truck with every type of hay.'
        ($\exists > \forall, *\forall > \exists$)

The Russian *spray-load* alternation is fully parallel to its English counterpart in terms of scope: (7a) is parallel to (3a) in being scopally ambiguous, (7b) is like (3b) in allowing surface scope only. While the construction in Russian is known to be much less productive than it is in English, Antonyuk (2015) provides a long list of what appear to be bona fide *spray-load* verbs, all of which exhibit the above scope contrast as well as the semantic entailment relations that are known to hold between the alternating *spray-load* pairs in English[8]. In addition to the true *spray-load* verbs, Russian also possesses a much more numerous group of *spray-load* type verbs that do not participate in the morphological alternation proper observed in (7), but that nevertheless show the same scope freezing effect.

2.3   Frozen Scope in Russian: Novel Evidence from Russian Spray-Load Type Verbs
The verb in (8) and many more like it appear to correspond semantically to the English *spray-load* verbs, but they do not participate in the *spray-load* alternation. Still, perhaps surprisingly, these verbs also exhibit the scope freezing observed with true *spray-load* verbs:

(8) a.   Maša   nakryla   kakoj-to prostynej každoe kreslo.
        Masha$_{NOM}$ covered   some   sheet$_{INSTR}$ every   chair$_{ACC}$
        'Masha put some sheet over every chair.'   ($\exists > \forall, \forall > \exists$)
   b.   Maša   nakryla   kakoe-to kreslo   každoj prostynej.
        Masha $_{NOM}$ covered   some   chair$_{ACC}$ every   sheet$_{INSTR}$
        'Masha covered some chair with every sheet.'   ($\exists > \forall, *\forall > \exists$)

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[8] See Rappaport and Levin 1988 and Kearns 2011 for details.

As seen in (8), the verbs in this group take two internal arguments, neither of which is headed by a preposition, as is the case with true *spray-load* verbs. Both arguments can be realized as Quantifier Phrases, one marked with Accusative case, and the other with Instrumental. In all of the examples of this type, the order on which the Instrumental-marked QP precedes the Accusative-marked QP is scopally ambiguous, while the opposite order exhibits scope freezing.

2.4   Frozen Scope in Russian: Novel Evidence from Russian Reflexive Monotransitives

The last syntactic context related to ditransitives I will discuss here is what I call "reflexive monotransitives". These predicates are built from true ditransitives (9a,b) by reflexivization; one of the predicate's arguments is then typically expressed as an adjunct PP as in (9c,d).

(9) a. Maša   zarazila   kakoj-to   bolezn'ju   každogo   pacienta.
         Masha infect$_{PST}$ some   disease$_{INSTR}$ every   patient$_{ACC}$
         'Masha infected every patient with some disease.' ($\exists > \forall$, $\forall > \exists$)

   b. Maša   zarazila   kakogo-to   pacienta   každoj   bolezn'ju.
         Masha infect$_{PST}$ some   patient$_{ACC}$ every   disease$_{INSTR}$
         'Masha infected some patient with every disease.'
         ($\exists > \forall$, *$\forall > \exists$)

   c. Maša   zarazilas'   kakoj-to   bolezn'ju   ot   každogo
         Masha infect$_{PST.REFL}$ some   disease$_{INSTR}$ from every
         pacienta.
         patient$_{GEN}$
         'Masha got infected with some disease by every patient'
         ($\exists > \forall$, $\forall > \exists$)

   d. Maša   zarazilas'   ot   kakogo-to   pacienta   každoj
         Masha infect$_{PST.REFL}$ from some   patient$_{GEN}$ every
         bolezn'ju.
         disease$_{INSTR}$
         'Masha got infected with every disease by some patient.'
         ($\exists > \forall$, *$\forall > \exists$)

The scope pattern that holds with the ditransitive predicate in (9a,b) is preserved with the reflexive predicate in (9c,d). However, the internal

argument structure of the ditransitive and the corresponding reflexive is different, with one of the ditransitive's internal arguments being realized as an adjunct that takes a Genitive-marked complement. Held constant in the two examples is the linear order of quantification phrases, with scope being free when the order is INSTR >> ACC and surface scope frozen, when the order is reversed. Given that such crossing of QPs is observed with all the other cases of scope freezing we have seen so far, it appears to offer a clue as to what causes freezing in the first place. In the next section we will see that this idea is correct and that there are even more drastic cases of scope freezing in Russian where it is observed between "crossed" QPs that are sometimes the internal and the external arguments of the verb[9] (i.e., object QP scrambling across the subject QP) or, most strikingly, are arguments of different predicates (as is the case with scope freezing that obtains with Long-Distance Scrambling of a QP across the structurally higher QP in the upper clause).

2.5   Scope Freezing and Scrambling

As noted above, recent research on quantification has observed many similarities between Russian and English in the covert movement of quantifiers and the syntactic properties of this movement. However, Russian being a language with much more flexibility in terms of allowed word order permutations, known as Scrambling, the question naturally arises as to how Scrambling interacts with QR (if at all). As I will now show, overt movement of QPs, as instantiated by both Local and Long-Distance Scrambling in Russian, despite their other well-known syntactic differences (Bailyn 2001, 2002), behave identically with respect to scope[10]. Specifically, both types of QP Scrambling seem to lead to frozen

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[9] Note that Bruening (2001) specifically argues that the internal and the external argument of the verb do not participate in scope freezing, as in his Superiority-based feature attraction system the two QPs would not be in competition with each other.

[10] The facts are indeed surprising when viewed from the perspective of scope freezing accounts provided for English that posit a certain structural relation between VP-internal QPs that results in frozen scope (cf. Bruening 2001, Johnson 2001). On such accounts neither Local nor Long-Distance Scrambling are expected to exhibit scope freezing, as no comparable structural relation between the two QPs can be posited in scrambled sentences.

surface scope[11]. Sentences with overtly scrambled QPs therefore present another context where frozen surface scope is found in the language.

2.5.1 Scope Freezing with Long-Distance Scrambling   Reconstruction of Long-Distance Scrambling (LDS) of non-quantificational phrases appears to be obligatory, as illustrated by pairs like (10a,b). The Principle C violation in (10a) is not improved after the application of LDS (10b), suggesting that the name *Mašinu* must reconstruct to its position in the c-command domain of *ona* 'she'[12]:

(10) a. * Ja   xoču čtoby **ona$_j$**   vstretila **Mašinu$_j$**
          I   want that   she$_{NOM}$ met   Masha$_{POSS}$
          babušku.
          grandmother$_{ACC}$
          'I want her to meet Masha's grandmother.'
      b. * [**Mašinu$_j$**   babušku]$_k$ ja   xoču   čtoby   **ona$_j$**
            Masha$_{POSS}$ grandmother$_{ACC}$ I   want   that   she
          vstretila   **t$_k$.**
          met
          'Masha's grandmother, I want her to meet.'

LDS of quantificational phrases, on the other hand, does not reconstruct, which is especially clear if the matrix subject is also quantificational. Scrambling a QP containing a coreferenced R-expression may or may

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[11] To my knowledge, Ionin 2001/2003 was the first paper to look at the interaction of word order and scope in Russian. Although I disagree with Ionin regarding the (un)availability of non-local QR in Russian, her main original insight that overtly moved QPs do not reconstruct for the purposes of scope is strongly supported with my own data presented in this section (originally discussed in Antonyuk-Yudina 2009 and developed in more detail in Antonyuk 2015).

[12] A reviewer suggested that I add a baseline configuration showing that coreference between a possessive and a pronoun is in principle possible in Russian:

(i)   [**Mašina$_j$**   babuška]$_k$ xočet čtoby **ona$_j$** vstretila ee$_k$ na vokzale.
      Masha$_{POSS}$ grandmother$_{NOM}$ wants that   she met   her at train station
      'Masha$_j$'s grandmother$_k$ wants her$_j$ to meet her$_k$ at the train station.'

The example in (i), in which the possessive phrase is in Nominative case, is fully grammatical on coreference with the pronoun. The same configuration with the possessor marked with Accusative case would not be grammatical, of course, as the phrase in question would have to be scrambled to its surface position and would then obligatorily reconstruct, which is exactly the point demonstrated in (10b) above.

not reconstruct for different speakers with the non-quantificational matrix subject such as *ja* ('I') in (11b); when the subject *is* quantificational (as in (11c)), all speakers agree that the sentence is perfectly grammatical on coreference between the pronoun and the R-expression:

(11) a. * Ja xoču čtoby **on$_j$**   uvolil každogo sovetnika
          I   want that he$_{NOM}$ fired every   adviser
      Buša$_j$.
      Bush$_{ACC}$
      'I want him$_i$ to fire every adviser of Bush$_i$.'

    b. */??[Každogo sovetnika **Buša$_j$**]$_i$ ja xoču čtoby **on$_j$**
          every   adviser   Bush$_{ACC}$ I   want that he$_{NOM}$
      uvolil   **t$_i$**.
      fired
      'Every adviser of Bush$_i$, I want him$_i$ to fire.'

    c. [Každogo sovetnika **Buša$_j$**]$_i$ kto-to   xočet   čtoby
          every   adviser   Bush$_{ACC}$ someone   wants   that
      on$_j$ uvolil   **t$_i$**.
      he$_{NOM}$ fired
      'Every adviser of Bush$_i$, somebody wants him$_i$ to fire'
      (every > someone > want, *(someone > want > every))

Thus LD Scrambling of a QP across another QP results in surface scope due to the scrambled QP not being able to reconstruct to a position below the QP it crossed on its way up[13],[14]. Both the scope facts and Binding Principle C facts strongly support this conclusion.

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[13] It has been suggested to me by a reviewer of a related paper that the way to resolve this tension is to adopt the Copy Theory of Movement (Chomsky 1993) in conjunction with a theory of which phrases can and cannot be late-merged, such as Takahashi and Hulsey 2009. On such an account, the R-expression would be merged before the application of LDS, thus, being present at the lower position as well as the higher one, hence accounting for the Principle C effect in (10b). While I acknowledge the ability of this account to explain examples like (10), I believe it is not enough to account for the contrast in (11), where the sentences also contain an R-expression in the LD-Scrambled phrase as in (10), yet, are grammatical. The crucial difference between the ungrammatical (10b) and the grammatical (11c) then appears to be that in the latter the R-expression is contained within a QP that undergoes LDS and, moreover, the QP is 'trapped' in the higher position by the presence of another QP in the upper clause that is being crossed over; in the

2.5.2 Scope Freezing with Local Scrambling   Russian sentences with a quantificational subject and a quantificational object are ambiguous between surface and inverse scope in their standard word order (Antonyuk 2006, 2015). Thus, (12a) can mean that Masha is sure there is some one person who heard every joke in some contextually delimited set (surface scope reading), or it can mean that Masha is sure that for each joke in the relevant set, some person or other heard it, where people can vary with jokes (the inverse scope reading).

(12) a. Maša   uverena, čto   kakoj-to čelovek   uslyšal
          Masha   sure   that   some   person_NOM   heard
          každuju   šutku.
          every   joke_ACC
          'Masha is sure that some person heard every joke'
          (some > every, every > some)
      b. Maša   uverena, čto [kakuju-to   šutku]_i každyj
          Masha   sure   that some   joke_ACC every
          čelovek   uslyšal **t_i**.
          person_NOM heard
          'Masha is sure that some joke, every person heard.'
          (some > every, *every > some)

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former, this is not the case. On the above-suggested account we might reasonably expect the R-expression to be present before LDS in sentences in (11) just as in (10), predicting, incorrectly, no difference between (11c) on the one hand and (10b) on the other.

[14] The scope facts in the following sentences similarly suggest that reconstruction of a Long Distance-scrambled QP does not take place. Thus, while the sentence in (iia) is ambiguous between the surface and the inverse scope reading due to the interaction of the two QPs in the subordinate clause, the sentence in (iib) only allows surface scope or the wide scope for the scrambled QP. Given the clause-bound nature of QP scope, the lack of interaction between the two QPs is expected if there is no reconstruction of the scrambled QP, since the two quantificational phrases are now in different clauses.

(ii) a. Ja   xoču čtoby dva studenta   priglasili každogo spikera.
          I   want   that   two students_NOM invited   every   speaker_ACC
          'I want two students to invite every speaker.'
          (two > every, every > two)
      b. Každogo spikera   kto-to   xočet čtoby dva studenta   priglasili
          every   speaker_ACC someone_NOM wants that   two students_NOM invited
          'Every speaker, someone wants two students to invite.'
          (every > someone> two, *someone > every)

By contrast, the sentence in (12b), where the object QP has been locally scrambled to the front of the clause, seems to have only the surface scope reading, on which some particular joke was heard by every person in the relevant set of people[15]. Moving a QP overtly across another QP, thus, appears to fix scope so that the structurally higher QP now unambiguously takes wide scope, that is, 'frozen' surface scope obtains[16],[17]. Overt displacement of a QP (versus a referring expression) via Local Scrambling, thus, may not reconstruct.

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[15] The existential and the universal QPs have been switched in this sentence to ensure that the universal remains in a structurally lower position after scrambling has taken place, thus, restricting available interpretations to those that arise through the syntactic mechanism of QR only (see Pietroski and Hornstein 2002 for relevant discussion).

[16] The lack of reconstruction of the object QP is surprising given that non-quantificational phrases must reconstruct, as again shown by the Principle C violation in (iii) where the R-expression has been scrambled outside of the c-command domain of the coreferring pronoun:

(iii) * [Mašino otraženie]$_j$ ona$_j$ uvidela t$_j$ v bol'šom zerkale na stene.
　　　Masha's reflection$_{ACC}$ she$_{NOM}$ saw　in big　mirror on　wall
　'Masha's$_j$ reflection, she$_j$ saw in the big mirror on the wall'

[17] Expectedly, the same behavior of QPs with respect to reconstruction is observed with ditransitives as well. Consider the contrast in (iv):

(iv) a. 　* Druz'jarekomendovali ee$_j$　　každomu buduščemu bossu　　Maši$_j$.
　　　　　friends recommended her$_{ACC}$ every　　future　　boss$_{DAT}$ Masha$_{GEN}$
　　　　'Friends recommended her$_i$ to every future boss of Masha$_i$.'

　　b.　? Každomu buduščemu bossu　　Maši$_j$　　druz'ja　　rekomendovali
　　　　　every　　future　　boss$_{DAT}$ Masha$_{GEN}$ friends$_{NOM}$ recommended
　　　　ee$_j$　(po ee$_j$ že　pros'be).
　　　　her$_{ACC}$　on her PART request
　　　　'Every future boss of Masha$_i$, her friends recommended her$_i$ [to him] (on her$_i$ own request).'

　　c.　Každomu buduščemu bossu　　Maši$_j$　　kto-to　　　recommended
　　　　every　　future　　boss$_{DAT}$ Masha$_{GEN}$ someone$_{NOM}$ rekomendoval
　　　　ee$_j$　(po ee$_j$ že　pros'be).
　　　　her$_{ACC}$　on her PART request
　　　　'Every future boss of Masha$_i$, someone recommended her$_i$ [to him] (on her$_i$ own request).'

Here the Accusative-marked pronoun *ee* c-commands the coreferenced R-expression contained within the Dative-marked object in surface syntax (iva), with the sentence being ungrammatical due to a Principle C violation. Scrambling the QP containing the R-expression to the front of the sentence improves the sentence for most speakers (ivb); those who accept (ivb) but find it somewhat degraded do agree that (ivc), containing a quantificational subject *kto-to* 'someone' instead of the non-quantificational *druz'ja*

Taking together the results of this and the preceding section, we see that Local or Long Distance Scrambling of one quantifier (QP1) across another quantifier (QP2) exhibits scope freezing in two distinct ways. First, QP1 needn't subsequently (i.e. post overt movement) scope under QP2 by reconstruction (13a). Second, QP2 cannot subsequently scope over QP1 by QR (13b).

(13)   a.   … QP1 … QP2 … **QP1** …
            ↳ → →   **X RECONSTRUCTION**
       b.   … QP1 … QP2 … **QP1** …
            ← ← ↵ **X QUANTIFIER RAISING**

The former is evidenced by binding facts (Principle C). The latter is evidenced by scope judgments. The scrambling facts in particular thus suggest the following broad Scope Freezing Generalization:

(14)   **SF Generalization (SFG):** Scope freezing always results from overt raising of one QP over another to a c-commanding position.

As reminded to me by Richard Larson (p.c.), it is standard in the literature on scope freezing to think of the phenomenon exclusively in the following terms: … QP1 … QP2 … are frozen = one cannot *raise* QP2 above QP1. The observation of this paper is that there is another independent half to this: … QP1 … QP2 … are frozen = one cannot *lower* QP1 beneath QP2. The empirical phenomenon of Scope Freezing then is that adjustments in both directions are blocked. Under the SF Generalization, the feature unifying all scopally frozen cases in Russian is the presence of an overt instance of raising of a structurally lower QP across a higher one[18],[19]. In what follows I argue

'friends', is perfectly grammatical on coreference. The contrast between (ivb) and (ivc) that exists for most speakers I have consulted seems particularly important, as it shows that it is the quantificational nature of the scrambled constituent and of the constituent that is being scrambled across that is responsible for the lack of reconstruction. It is quite likely that the speakers who find sentences such as (ivb) to be acceptable interpret the matrix subject as containing a covert existential quantifier (e.g., *kakie-to druz'ja* 'some friends' rather than *druz'ja* 'friends'). This would explain why the otherwise predicted reconstruction does not take place for such speakers.

[18] As already mentioned, that it is an overt instance of QP raising across another QP that freezes scope is particularly clear in examples with QP Scrambling, as well as with cases

that the SF Generalization in (14) provides the crucial empirical insight that will help us better understand the phenomenon of scope freezing and offer a novel account that can cover the full range of scope freezing data discussed in this section.

3 Capturing Russian Scope Freezing: the Proposed Account

In what follows I would like to explore a novel idea that scope freezing is a phenomenon that obtains due to a special relation, call it Relation $\Re$, which is established between the two QPs whenever the lower QP *overtly* crosses the higher one[20]. The idea is inspired by and is based on the empirical SF Generalization provided in (14). As discussed in detail in Antonyuk 2015, all existing accounts of scope freezing run into significant problems when encountered with the totality of Russian QP scope data. To understand the nature of the proposed relation between the two QPs in a frozen scope configuration that is able to account for its relative nature, it will be helpful to consider some analogies from syntax that we are already well familiar with. The most striking analogy that will be helpful for us in trying to understand the Relation $\Re$ is one that is suggested by binding. Consider the pair of examples in (15), due to Higginbotham (1980):

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involving *spray-load* type verbs, where it is fairly obvious that it is overt QP "crossing" that leads to freezing, everything else being kept the same. The willingness to accept the conclusion that similar instances of overt QP crossing take place in cases with ditransitives and true *spray-load* alternations, for instance, depends on one's assumptions about the underlying verb phrase structure in those constructions. For reasons of space, I cannot provide evidence supporting the above conclusion, instead referring the reader to Bailyn 2012, Antonyuk 2015, i.a. I will note, however, that making the assumption that all surface scope frozen sentences discussed above are derived in accordance with SFG in (14) allows us to unify all these rather distinct constructions as well as offer a truly novel perspective on the phenomenon of scope freezing in general.

[19] A speaker of Russian may notice that related OVS sentences are ambiguous, which at first glance appears to falsify the SF Generalization in (14). However, as discussed in Antonyuk 2015, the ambiguity of OVS sentences is not only expected, given the analysis of such sentences that involves remnant VP movement with subsequent object raising into subject position (see, for instance, Erechko 2003; cf. Bailyn 2012), but it also provides important new insights into what instances of overt movement do and do not freeze scope. See Antonyuk 2015 for details.

[20] I am very grateful to Richard Larson (p.c.) for suggesting this route for me to explore.

(15) a. Some musician played every piece. ($\exists > \forall, \forall > \exists$)
   b. [Some musician]$_j$ played every piece that you wanted him$_j$ to. ($\exists > \forall, *\forall > \exists$)
   c. [every piece that you wanted him$_j$ to play]$_k$ [some musician]$_j$ x$_j$ played x$_k$.

As can be easily verified, sentences such as (15a) are scopally ambiguous. (15b), in which the subject QP binds the pronoun contained inside the lower QP object, is not. The position of the two QPs is the same in the two sentences; the ambiguity of (15a), thus, proves that *every piece* is indeed capable of taking scope over the subject QP. Yet, in (15b) it doesn't. Such lack of ambiguity is generally recognized to be due to the bound variable relation established between the subject QP and the pronoun embedded in the object QP. Raising the object QP to a position where it would be able to scope over the subject is disallowed, since the variable would be left unbound at LF in this case (15c)[21]. Thus, the presence of this binding relation effectively leads to a frozen surface scope configuration, with the object technically being able to move, yet, unable to do so due to the existing binding relation. The same point is illustrated in a somewhat richer context in (16), which involves an intensional verb *want*. Again the object's ability to take scope is dependent on existing binding relations.

(16) a. Everyone wants [John to buy something].
       ($\forall >$ want $> \exists, \forall > \exists >$ want, $\exists > \forall >$ want)
   b. Everyone$_j$ wants [John to buy [something for him$_j$].
       ($\forall >$ want $> \exists, \forall > \exists >$ want)
   c. Everyone wants [John$_i$ to buy [something for himself$_i$]].
       ($\forall >$ want $> \exists$)

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[21] On accounts that argue for the obligatory reconstruction of the subject below its surface position with simultaneous object raising above the subject's reconstructed position for the ambiguity to arise (i.e. Johnson and Tomioka 1998), the lack of ambiguity in (15b) would result from the subject being unable to reconstruct because of the established binding relation. As we have just discussed, blocking of either of these mechanisms, QR or Reconstruction (post overt QP movement), seems to be involved in producing scopally frozen configurations.

(16a) allows all possible scopes for the object QP *something*: it can be read *de dicto* or *de re* with respect to the verb *want*, and it can have wide scope or narrow scope with respect to the matrix subject. In (16b), with the pronoun bound by the subject QP, the highest scope for the object QP is excluded. As with (15b), this reading would entail scoping the object QP above the subject, leaving the pronoun him_j unbound at LF. Now consider (16c). Here the lower QP contains an anaphoric pronoun *himself*$_i$, which is bound by the embedded subject *John*. Given locality binding constraints on the anaphor, the object QP containing the anaphor cannot raise above the intensional verb, hence only the lowest scope for this QP is available. The sentence can, thus, only mean that everyone has a wish that John buy something for himself, whatever it may be.

   A closely related set of cases, demonstrating the properties ascribed to Relation $\Re$, involves Inverse Linking constructions (May 1977, 1985, Larson 1985, Larson and May 1990, May and Bale 2005), provided in (17a)[22].

(17) a. Someone from every city despises it. (May 1985, ex.26)
     b. [every city]$_j$ [someone from t_j]$_i$ t_i despises it$_{j/k}$
     c. [someone [[every city]$_j$ from t_j]]$_i$ t_i despises it$_{*j/k}$

Two scopal assignments are available for (17). On the one corresponding to the most natural reading (17b), the contained QP (*every city*) takes scope over the containing quantifier (*someone*). In this case, *every city* can be understood as binding the object pronoun *it*. On the assignment corresponding to the less natural (pragmatically odd) reading (17c), the containing quantifier (*someone*) takes scope over the contained QP (*every city*). Here *every city* cannot be understood as binding the object pronoun *it* and its reference must be fixed deictically/pragmatically. (15b) above and the inversely linked structure (17b) resemble each other insofar as in both a higher quantifier binds into the nominal restriction (the NP complement) of a lower quantifier (18). In the case of (15b), the

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[22] Please note that the above examples from scope and binding and Inverse Linking are meant to provide a way of thinking of this new Relation $\Re$ by discussing its similarities with phenomena that are more familiar and better understood at the moment. I do not mean to imply equivalence or full analogy between these phenomena.

relation is pronominal binding (QP_i, *him*$_i$); in the case of (17b), the relation is trace binding, produced by movement (QP_j, t_j).

(18)   ... QP_i ... [Q [NP ... x_i ...]] ...

This makes the interpretation of the lower quantifier dependent on the interpretation of the upper quantifier in a stronger sense than the usual one determined by scope. On the usual Tarskian semantics for quantifiers, involving alternative assignments of values to variables, interpretation, for example, of a universal quantifier with scope over an existential quantifier (19a) is understood as requiring that for each choice of **x** from a domain determined by some predicate P, there is a **y** from a domain determined by some predicate Q such that R(x,y). Here the domains of individuals over which the two quantifiers range are determined independently of each other. In the case of an LF like (18), however, the quantifiers become much more intimately linked (19b).

(19)   a. $[\forall x: P(x)]$ $[\exists y: Q(y)]R(x,y)$
       b. $[\forall x: P(x)]$ $[\exists y: S(x,y)]$ $R(x,y)$

Now we require that for each choice of **x** from a domain determined by P there be a **y** from a domain determined by the choice of **x** (S(x,y)) such that R(x,y). The domain over which the inner quantifier ranges is thus not determined independently anymore, as in (19a), but instead relationally with respect to the outer quantifier.

　　Interestingly, Stanley and Szabó (2000) and Stanley (2002) have argued that binding into quantifier domain restrictions is far more pervasive than is generally recognized. Thus, as Stanley (2002) observes, (20) is naturally interpreted along the lines of 'Every person x answered every question that x was asked', 'Every person x answered every question on x's exam', etc.

(20)   Everyone answered every question.   (Stanley (2002), p.4, ex. 41)

Such an understanding implies the presence of a variable somewhere inside the phase *every question* that is available for binding. Similar examples offered by Stanley are (21a,b) (2002, p.5):

(21) a.   In most of his classes, John fails exactly three Frenchmen.
          = In most of his classes x, John fails exactly 3 Frenchmen in x.
      b.   In every room in John's house, he keeps every bottle in a corner.
          = In every room x in John's house, he keeps every bottle in x in a corner.

Note that the strength of this interpretive effect is considerable. Most speakers report that it is not only natural to interpret the object quantifier domain in (20) and (21) relative to the subject quantifier or the preposed PP, it is virtually necessary to do so. Thus the questions in (20) must be understood as questions posed to the persons quantified over by the subject. The Frenchmen in (21a) must be understood as Frenchmen in John's classes, etc. This effect is particularly notable in cases of quantifiers that otherwise resist contextual determination. Compare (22a,b):

(22) a.   John spoke to each boy.
      b.   John spoke to each of these three boys.

In (22a) the domain of quantification is naturally understood as contextually restricted; each boy can be understood as 'each boy at the party/each boy in John's class', etc. However, as observed by Danny Fox (p.c.), (22b) shows much less latitude in that respect. Deictic determination of the quantifier domain by these does not readily allow for further contextual restriction. Consider now (23), a variant of (21a):

(23) a.   In most of his classes, John fails each of these three boys.
          = In most of his classes x, John fails each of these three boys #(in x).
      b.   Everyone answered each of these three questions.
          = Every person x answered each of these three questions on x's exam.

Here again it seems virtually impossible to resist interpreting the three boys in question as boys in John's classes. Similarly for (23b). Hence

even in the case of deictic determination, the domain restriction effect continues to assert itself.

The cases surveyed above show interesting similarities to what is found with "domain determining constructions" like those setting a topic (24a–c). Note that the latter can be connected to the main clause by means of a trace (24a), or a pronoun that is either explicitly present (24b) or left implicit (24c). Furthermore, as in the quantifier case, it is virtually impossible to resist interpreting the main clause with respect to a topic, and when this is excluded the result is virtually uninterpretable (24d).

(24) a. Fish$_i$, Mary eats t$_i$ every Friday.
      b. As for fish, Mary eats it every Friday.
      c. As for fish, Friday is Mary's preferred day.
   d. #As for fish, Mary buys Rolex watches.

I propose an account of Scope Freezing that assimilates it to domain restriction binding and, in particular, leverages the fact that all of Russian inversion constructions discussed above have the general effect of "topicalizing" the fronted item. Thus, I want to suggest that when a quantifier is raised over another to a c-commanding position the result is, effectively, creation of a "domain topic" as in (21a) that must be resumed by binding in the quantifier beneath it (25). An important question in this respect is what differentiates between the overt raising of a QP that arguably causes scope freezing from the covert quantifier raising, QR, which clearly does not[23]. There are two related ways to answer this question. First, as reminded to me by Richard Larson (p.c.), if we conceptualize QR as a relation in which only the operator remains in its LF position, with the restriction being interpreted at the tail of the chain (Fox 1999), then the kind of domain binding I suggest takes place with overt QP crossing simply becomes impossible with QR[24] (I believe that this idea, if correct, also provides an argument in favor of Stanley and Szabó's (2000) treatment of variable as localized in the nominal restriction, as opposed to in the quantificational determiner (von Fintel 1994)). Another way to respond to the question would be to note that

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[23] The question is due to Chris Collins (p.c.)

[24] As pointed out by a reviewer, this explanation is at odds with the facts of and the explanation given for (11c), predicting it to be ungrammatical, contrary to fact. I do not currently have a solution to this problem.

while the proposed scope-freezing overt QP movement is argued to crucially possess topicalizing properties, the same is not true of QR: to the best of my knowledge no one has argued for the existence of LF Topicalization/LF Left Dislocation; indeed, it is not clear what the operation would entail and what properties one would ascribe to it.

(25)   ⌐ − − − − − − − − − ⌐   **BINDING**
      … **QP$_i$** … [Q [$_{NP}$ … x$_i$ …]] … QP$_i$ …
          ↑_____⌐ **MOVEMENT**
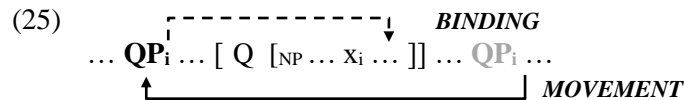
As shown in (25), creation of this binding relation has the outcome of freezing relative scopes of the two QPs, insofar as any further movements the two make must preserve binding on pain of an unbound variable (x$_i$) at LF as in (15c) above. Thus, the current account gets the distribution of scope freezing facts right specifically since either raising QP2 above QP1 or lowering QP1 beneath QP2 will break the binding relation between them that gets established by overt QP raising.

To illustrate this with a concrete example, consider the Russian "double object construction" equivalent in (26a), which shows frozen scope, and which I assume to derive from an underlying ACC >> DAT order by raising the Dative over the Accusative (26b)[25].

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[25] A reviewer notes that quantifier domain restriction becomes less pervasive if we use an overt restrictor. Thus, while (20) indeed suggests an interpretation like 'Every person x answered every question that x was asked', (20') is completely natural without any implicit restriction.
(20) Everyone answered every question.
(20') Everyone answered every question that I was asked.
According to the reviewer, this may have consequences for the analysis — i.e., one might expect (26) to allow inverse scope if some overt restriction was introduced, making the implicit restriction pragmatically unlikely. Modifying (26) in the way suggested by the reviewer, we get (26'):
(26') Maša   predložila [kakoj-to devočke] [každuju igrušku], čto ja kupila.
       Masha offered   some   girl.DAT   every   toy.ACC that I bought
       'Masha offered some girl every toy that I bought' (∃ > ∀, *∀>∃)
The Russian sentence in (26') remains surface scope frozen (as does the English equivalent), suggesting that the addition of an overt restrictor is insufficient to break up the syntactic binding relation established upon overt raising of the lower QP. I would argue that this is as expected, if Relation ℜ that I posit in such cases is indeed a case of syntactic binding. For instance, adding an overt restrictor does not break binding in Inverse Linking cases either, as far as I can tell:

(26) a. Maša   predložila [kakoj-to devočke] [každuju igrušku].
     Masha offered   some   girl.DAT   every   toy.ACC
     'Masha offered some girl every toy'   ($\exists > \forall$, *$\forall > \exists$)

   b. **[kakoj-to devočke]** [každuju igrušku] [kakoj-to devočke]

   c. **[kakoj-to devočke]$_i$** [každuju igrušku^i] [kakoj-to devočke]

As pointed about by Sergei Tatevosov (p.c.), the intuition of domain dependence is not especially strong with cases like (26); a potential way to interpret *igrušku*^{i} is as 'toy for x$_i$ to have' so that (26c) is interpreted 'Mary offered some girl x every toy y for her (= x) to have'. In other cases, however, the sense of domain dependence is much clearer. Thus, consider (27a), an example of what I termed "reflexive monotransitives". (27a) exhibits scope freezing, just like ditransitives and *spray-load* verbs, and I assume it derives from an underlying INSTR >> GEN order by raising the Genitive over the Instrumental (27b). By assumptions, this induces a binding relation between the raised existential quantifier *[ot kakogo-to pacienta]*$_i$ and a variable contained within the domain restriction of the universal *[každoj bolezn'ju]* (27c):

(17') Someone [from every city that I never even heard about] despises it.

Thus, testing the reviewer's suggestion against the data highlights the point possibly not stressed strongly enough in the text above: namely, that although the quantifier domain restriction theory of Stanley and Szabó inspired the account due to the striking similarity between the phenomena in question, they nevertheless do not seem to be identical. Specifically, while in the cases discussed in Stanley and Szabó 2000 and Stanley 2002 lexical and pragmatic considerations seem to play a significant role (as rightly noted by another reviewer, "The binding relation seems obligatory in (21a) because one simply cannot fail students that are not in one's class. Similarly for (21b), one cannot keep a bottle in a room unless the bottle is in the room"), this simply does not seem to be the case with Relation ℜ, which in this sense appears to be a strictly syntactic, non-optional phenomenon.

(27) a. Maša   zarazilas'   [ot   kakogo-to   pacienta]
     Masha   infected_REFL [from   some   patient_GEN
     [každoj   bolezn'ju].
       every   disease_INSTR
     'Masha got infected with every disease by some patient.
     ($\exists > \forall$, *$\forall > \exists$)

     b. **[ot kakogo-to pacienta]$_i$** [každoj bolezn'ju^i] [ot kakogo-to
        pacienta]

Here we plainly understand the diseases Masha developed precisely as the diseases of the relevant patient, so that (27a) is understood equivalently to 'Some patient x infected Masha with all of x's diseases'. Here binding into the domain restriction of the universal is straightforward. Again, assuming this binding is established by raising, it will need to be preserved in any further movements of the two quantifiers. Hence, although there is no barrier to their raising higher (for example, out of an embedded clause), the relative scope order of the two QPs must be maintained for LF well-formedness, which offers a natural account of the *relative* nature of scope freezing.

4   Conclusions

In this paper I have presented novel evidence supporting the view of Russian as a language that exhibits the same basic properties in the area of quantifier scope as those known from English. Specifically, the data presented here establish that Russian possesses constructions exhibiting the scope freezing effect that is fully parallel to that found in the English double object construction and the *with*-variant of the *spray-load* construction.

However, the Russian data also show that the scope freezing that is arguably limited in English is a much more wide-spread phenomenon in Russian: it is found in constructions ranging from ditransitives to scrambling configurations. Such numerous, diverse and often syntactically unrelated contexts where scope freezing is found present a major challenge for all current accounts of surface scope freezing (Bruening 2001, Johnson 2001, Antonyuk-Yudina 2009, Larson and Harada 2011, Bobaljik and Wurmbrand 2012). On the basis of the empirical Scope Freezing Generalization advanced here I propose a

novel analysis, which views the phenomenon as a Relation ℜ, established directly between the two QPs whenever the lower QP overtly raises over the higher one to a c-commanding position. This relation, conceptualized as domain restriction binding in the spirit of Stanley and Szabó 2000 and Stanley 2002 bears distinct similarities to phenomena familiar from the literature, such as limitations on scope that arise from the interaction between scope and binding (Higginbotham 1980, i.a.). The account also allows us to explain what is arguably the crucial property of scope freezing: its *relative* nature. While the analysis needs to be developed more fully from the theoretical standpoint in future work, it allows us to account for the totality of Russian scope freezing facts and has significant cross-linguistic implications for other languages exhibiting the phenomenon of surface scope freezing.

Specifically, while I take the generalization in (14) to describe accurately the state of affairs in Russian and the closely related Ukrainian, the really interesting question, which falls outside the scope of this paper, is whether the SF Generalization can describe cross-linguistic facts accurately as well. Thus, the empirical question now is whether SFG can be brought to explain comparable scope freezing facts in languages such as English, Japanese, German, French, Icelandic and Norwegian, among others. I plan to explore this question in detail in my future work.

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syudina@gmail.com