The Preassigned Case of Russian Quantifiers*

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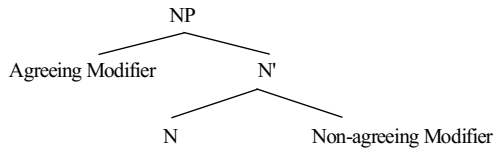
1. Introduction

1.1. Literature Review and the Paper's Purpose

Typical nominal phrases in Russian schematically have the following structure:

(1)



In other words, an agreeing modifier in Russian NP is in the Spec position, and a nonagreeing modifier is in the Comp position. For example, the nominal phrases in (2) have the same structure as presented in (1)[1].

(2) (a) [novaja [kniga Oruella]] (RNC 21.07.2020)[2]
new-nom.sg.f. book-nom.sg.f. Orwell-gen.sg.m.
"a new book of Orwell"

(b) [moja [kniga o Čexove]] (RNC 21.07.2020)
my-nom.sg.f. book-nom.sg.f. about Chekhov-loc.sg.m.
"my book on Chekhov"

In my earlier studies (Hikita 2007, 2010, 2013, 2015, 2017, 2018, 2019) I provided some proposals regarding the structure of Russian nominal phrases and how grammatical features are transmitted and copied inside or outside the phrase based on the ideas of Corbett (1978a, b) and Babby (1980, 1984, 1985a, 1986, 1987). My proposals have explained many aspects of the morphological forms of the phrase. In the following subsections, these ideas and proposals are reviewed.

1.1.1. Russian Numerals as a Continuum

Corbett (1978a, b) showed that cardinal numerals in Russian (and in some other Slavic languages)

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[1] Cyrillic alphabet is transliterated as follows: А = A, Б = B, В = V, Г = G, Д = D, Е = E, Ё = E, Ж = Ž, З = Z, И = I, К = K, Л = L, М = M, Н = N, О = O, П = P, Р = R, С = S, Т = T, У = U, Ф = F, Х = X, Ц = C, Ч = Č, Ш = Š, Щ = Šč, Ъ = ", Ы = Y, Ь = ', Э = È, Ю = Ju , and Я = Ja. Abbreviations used for grammatical features are nom = nominative, acc = accusative, gen = genitive, loc = locative, dat = dative, ins = instrumental, sg = singular, pc = paucal, pl = plural, m = masculine, n = neuter, f = feminine, an = animate, in = inanimate, I = first declension type, II = second declension type, III = third declension type, indc = indeclinable, pr = present/nonpast, pa = past, 1 = first person, 2 = second person, 3 = third person, inf = infinitive, imp = imperative, and dist = distributive preposition *po*.

[2] When the example is from the Russian National Corpus (RNC, https://ruscorpora.ru/new/), a retrieval date is provided.

Roshiago Kenkyu [Issues in Russian Linguistics], Roshiago Kenkyukai "Mokujikai" (Circle of Russian Linguistics "Mokujikai"), 30 (2020), 23-55.

constitute a continuum that lies between adjectives and nouns. Table (3) illustrates the grammatical behavior of each cardinal numeral in Russian.

(3) The Russian Numeral Squish (Corbett 1978a: 46)[3]

	1	2	3, 4	5	100	1,000	1,000,000
(i) agrees with N in syntactic number	+	−	−	−	−	−	−
(ii) agrees in case throughout	+	−	−	−	−	−	−
(iii) agrees in gender	+	(+)	−	−	−	−	−
(iv) marks animacy	+	(±)	(±)	−	−	−	−
(v) it is not the case that has own plural	+	+	+	+	(−)	−	−
(vi) it is not the case that takes agreeing determiner	+	+	+	+	+	−	−
(vii) it is not the case that takes N in genitive plural throughout	+	+	+	+	+	±	−

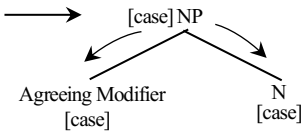
This continuity of numerals is a basis for our study. Our study aims to explain the continuity of quantifiers in terms of discrete formal system.

In the following sections of this paper, among the simplex cardinal numerals I call numerals 2, 3, 4 "Paucal Quantifiers" (PcQs); numerals 5 to 100 "Higher Quantifiers" (HQs); and numerals 1,000 and above "Nominal Quantifiers" (NQs)[4].

1.1.2. Case Percolation and Genitive of Quantification

Babby (1980, 1984, 1985a, 1986, 1987; and Freidin & Babby 1984) has considered that case is assigned to the topmost node of the nominal phrase and then percolates down toward the terminal nodes.

(4)



That is, agreeing modifiers do not receive case features from their head nouns; by contrast, case is percolated down from the node dominating them. In this paper, I adopt this approach.

1.1.3. Two Directions of Phi-Feature Transmission

I refer to Franks (1995) and consider that phi-features of the head are transmitted not only to agreeing modifiers, but also to the higher nodes that dominate them.

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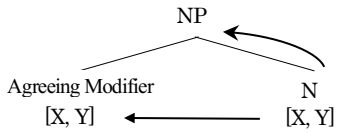
[3] The plus sign regarding gender agreement of the numeral "two" is included in parentheses because "two" shows gender opposition only partially: feminine or nonfeminine. The plus-minus and minus signs in parentheses mean that they have some morphological variants, especially in case of compound or complex numerals. Because compound and complex numerals are not considered in this paper, I consider throughout this paper that "two" and "three" do agree in animacy, and "hundred" does not have its own plural (See, e.g., Švedova et al. 1980: I: 575–576, Dimitrova 1994: 92).

[4] I consider that numerals are instances of quantifiers. For example, *mnogo* "many", *neskol'ko* "some" are not numerals but are quantifiers.

(5)

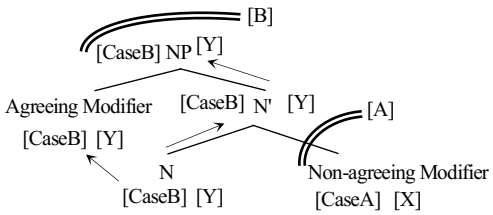


The feature transmission to agreeing modifiers is called “horizontal”, and transmission to upper nodes is called “upward”.

1.1.4. Case Domain and Boundary

I have assumed in Hikita (2017, 2018, 2019) that phi-features in principle cannot cross the “case boundary”, formed above the case-assigned node.

(6)



In (6), two cases, [A] and [B], are assigned. The nodes that share the same case constitute a “case domain” with a “case boundary” formed above them. Althogh nodes above the case boundary [A] (Head, N', Spec, and NP) share the same phi-feature [Y], a node below the boundary (Comp) has a different feature [X]. In other words, when case is assigned, the feature cannot go out of the phrase. This reason is why nonagreeing modifiers do not agree with their heads.

1.1.5. Case Overwriting and Genitive of Quantification

Babby (1987) assumed that the assignment of cases located higher in the following hierarchy takes precedence over that of the lower cases.

(7) Lexical Case > Structural Case

In Russian, Lexical cases include Genitive (Gen), Locative (Loc), Dative (Dat), and Instrumental (Ins), and Structural cases are Nominative (Nom), Accusative (Acc), and Genitive of quantification (GenQ). GenQ is a case that has been postulated by Babby (1980, 1984, 1985a, b, 1986, 1987) and is assigned by quantifiers (Q)[5]. Assuming the aforementioned hierarchy, Babby (1987) adequately explained the following homogeneous/heterogeneous case patterns of quantifier phrases (QP)[6] in Russian:

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[5] Quantifier (Q) is not a strictly defined category and is used for convenience throughout this paper. This nominal category includes cardinal numerals and indefinite quantifiers (e.g., *mnogo* “many”, *neskol'ko* “some”) and means the quantity of N(P) following it. There are no discrete boundaries between Qs and nouns or adjectives. As mentioned in 1.1.1, Q cannot be a discrete category.

[6] QP is also not a strictly defined category. It does not imply that the head of the phrase is Q. It merely states that the phrase consists of Q + N(P). I consider that QP is an instance of NP.

(8) "five books" in Each Case Environment[7]

(a) Nominative: pjat' knig
five-nom book-genq.pl

(b) Accusative: pjat' knig
five-acc book-genq.pl

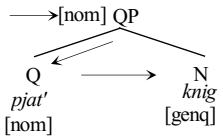
(c) Genitive: pjati knig
five-gen book-gen.pl

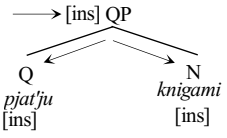
(d) Locative: pjati knigax
five-loc book-loc.pl

(e) Dative: pjati knigam
five-dat book-dat.pl

(f) Instrumental: pjat'ju knigami
five-ins book-ins.pl

In (8f), the QP is in a syntactic position to which Ins is assigned (i.e., in "instrumental environment"). The Ins assigned to the top node of the QP freely percolates down to Q, and to N, which is an assignee of GenQ by the Q. (7) states that Ins takes precedence over GenQ. By contrast, the same Structural case GenQ in (a) and (b) prevent the Structural cases Nom and Acc from percolating down to the Ns because of Locality Principle: Babby (1987: 116) assumed that the direct assignment of a case takes precedence over percolation, if they are located at the same level in the hierarchy (7).

(8a') 

(8f') 

Because I assume that syntactic derivation should be conducted *step-by-step*, assignment of GenQ does not "wait" for the assignment of Ins in (8f). When Q and N merge, GenQ must be immediately assigned. When the Ins assigner and QP merge and the Ins assigner assigns Ins to the QP, the N has already assigned GenQ in the earlier step. Thus, Ins *overwrites* GenQ. Although Babby (1987) did not assume case overwriting, I assume case-overwriting occurs in this case.

1.1.6. Features of Qs That Affect the Case Boundary

Although phi-features of typical nominal phrases never cross the case boundary, in some types of QPs they can, though not uniformly. For example, PcQ "two" assigns GenQ to N, while it receives a gender feature from the N beyond the case boundary.

(9) (a) dva goda (RNC 21.07.2020)
two-m. year-genq.pc.m.
"two years"

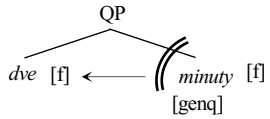
(b) dve minuty (RNC 21.07.2020)
two-f. minute-genq.pc.f.

[7] In Modern Russian gender opposition is lost in plural, the rule for which is introduced in 1.1.9. Hereafter, the gender feature is not indicated in glosses when it is plural, and if it is singular, only gender features are indicated and [sg] is omitted.

"two minutes"

In (9), the PcQ *dva/dve* agrees in gender with the nouns *goda* and *minuty*. Although a case boundary exists between *dve* and *minuty*, the gender feature [f] overrides the boundary and is copied to Q.

(10)



Hikita (2019) descriptively clarified that each Q has the grammatical features and feature-slots to be filled by feature-copy, as in (11):

(11)

	1	2	3, 4	5～	100	1,000	1,000,000
number	[ø]	[pc]	[pc]	×	×	[sg/pl]	[sg/pl]
gender	[ø]	[ø]	×	×	×	[f]	[m]
animacy	[ø]	[ø]	[ø]	[in]	[in]	[in]	[in]
inflectional type	×	×	×	[III]	[IV]	[II]	[I]
case	[ø]	[ø]	[ø]	[ø]	[ø]	[ø]	[ø]

Hikita (2019) also demonstrated that each quantifier has its own case-assigning ability and features that make N's grammatical features cross the case boundary.

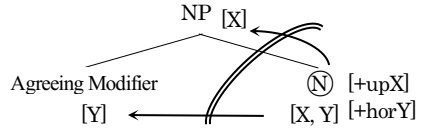
(12)

		1	2	3, 4	5	100	1,000	1,000,000
case assignment	(i) asCase	−	+	+	+	+	+	+
	(ii) asLex		−	−	−	−	±	+
feature-transmission across the boundary	(iii) upNum		+	+	+	+	+	+
	(iv) horNum		+	+	+	+	−	−
	(v) horGend		+	−	−	−	−	−
	(vi) upAni		+	+	−	−	−	−
	(vii) horAni		+	+	+	+	−	−
	(viii) setCtrl		+	+	+	+	+	+

The features prefixed "as-" are about case assignment. The feature "asCase" means the Q which has the feature can assign case. The feature "asLex" means that the Q can assign Lexical case. If [+asCase, −asLex], the Q assigns Structural case (namely, GenQ). If [+asCase, +asLex], the Q assigns Lexical case (namely, Gen).

The features prefixed "up-" an "hor-" permit the given phi-features of N to cross the case boundary upward and horizontally, respectively. That is, Q with [+upNum] permits the number feature of N to be transmitted upward and to cross the case boundary, and Q with [+horAni] makes animacy features go horizontally across the case boundary. The feature [+setCtrl] means that a node below the case boundary (e.g., the circled N below) can be a controller of predicate agreement (for details on multiple controllers, see the following section).

(13)



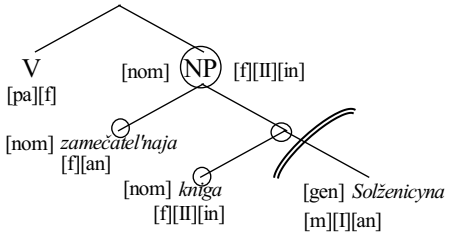
By postulating these features Hikita (2019) explained the descriptive facts that Russian Qs constitute a continuum that lies between adjectives and nouns, which Corbett(1978a, b) discovered.

1.1.7. Multiple Controllers of Predicate Agreement

Based on Hikita (2007, 2010), my assumption is that in Russian nominal phrases, when they control predicate agreement, more than one node can control the agreement. For example, any of the circled nodes in (14b) can be controllers:

(14) (a) zamečatel'naja kniga Solžnicyna (RNC 19.08.2020)
wonderful-nom.f book-nom.f Solzhenitsyn-gen.m
"a wonderful book of Solzhenitsyn"

(b)



Because in typical nominal phrases all of these nodes have the same phi-features which originate in the head noun, only one agreement pattern is possible.

(15) (...) v Moskvu prišla novaja kniga Solženicyna (...) (RNC 21.07.2020)
to Moscow-acc. come-pa.f. new-nom.f. book-nom.f. Solzhenitsyn-gen.
"The new book by Solzhenitsyn has come to Moscow."

Assuming that there can be multiple controllers of predicate agreement, and that Qs have the features listed in (11, 12), Hikita (2007) explained why QPs, unlike typical NPs, have some variants of predicate agreement (For more details, see subsections 3.3.2.2):

(16) [Pjat' bytylok] razbilis'/ razbilos'. (Babby 1987: 107)
five-nom bottle-genq.pl break-pa.pl -pa.n
"Five bottles were broken."

(17) [Million rossijan] posetilo/ posetili/ posetil Америку.
million-nom.m Russian-gen.pl visit-pa.n -pa.pl -pa.m America-acc
"Million Russians visited America."

1.1.8. Paucal Number

Akiyama (2002) hypothesized that genitive singular nouns following PcQs *dva* "two", *tri* "three", and *četyre* "four" are actually in paucal number. This hypothesis has been supported by Hikita (2007, 2010) in some aspects[8].

(18) dva studenta; tri tetradi
two-nom. student-genq.pc. three-nom. notebook-genq.pc.
"two students; three notebooks"

Hikita (2010) assumed that the grammatical feature of a paucal number comprises two values:

(19) [+pl, +pc]

Hikita (2010) also assumed that paucal number is maintained only in GenQ and that opposition of

[8] For a detailed discussion, see Hikita (2010).

[+pc] is lost in other cases. As a result of the loss of [+pc], it becomes plural.

(20) [+pl, +pc]→[+pl, ø] if case is not [genq]

1.1.9. Some Additional Rules

Hikita (2017, 2018) proposed the following rules:

(21) [gender]→ø, if [+pl]

(22) [type]→ø, if [+pl]

(23) [acc]→[gen], if gender, declension type, animacy features do not have values other than [m], [I], [an].

(24) [acc]→[nom], if the lexical item does not have an accusative form.

(25) *[+f & I]

Rule (21) is based on the traditional claim that in Modern Russian (MR) gender opposition is lost in plural (although in paucal it is preserved; see, e.g., Švedova et al. 1980, Wade 1992).

Rule (22) is based on the claim that in MR, the opposition of the declension type of nouns is not preserved in plural (see, e.g., Švedova et al. 1980, Levine 1978, Pesetsky 2013, Barnetová et al. 1979, Bailyn & Nevins 2008); although in paucal, it is preserved.

Rule (23) explains the so-called genitive-accusative form of animate nouns, and rule (24) explains the so-called nominative-accusative form of inanimate nouns. Hikita (2015) concluded that nominative-accusative, unlike a genitive-accusative, is not a syntactic phenomenon but a purely morphological phenomenon.

(25) reflects the descriptive facts that inflectional type [I] never cooccurs with the feminine gender. (Nørgård-Sørensen 2011: 63).

1.2. Some Descriptive Facts Explained by Earlier Works

In the preceding subsections some analyses accumulated in my earlier works have been introduced. In the following subsections of section 1, I illustrate the aforementioned rules and generalizations with concrete examples to demonstrate that they work correctly and can predict the grammaticality of the concrete examples.

1.2.1. Gender and Declension Type in Plural

Rule (21) captures that gender opposition is lost in plural in Russian:

(26) (a) ètot mal'čik / èta devočka / èto pis'mo
this-nom.m. boy-nom.m. this-nom.f. girl-nom.f. this-nom.n. letter-nom.n.
"this boy / girl / letter"

(b) èti mal'čiki / èti devočki / èti pis'ma
this-nom.pl. boy-nom.pl. this-nom.pl. girl-nom.pl. this-nom.pl. letter-nom.pl.
"these boys / girls / letters"

In (26), morphological gender opposition is lost in the plural. Rules (21) and (22) are not purely morphological rules in that they affect not only morphological forms of concrete words in the terminal

nodes, but also the case value of the entire nominal phrase, which I discuss in the following section[9].

1.2.2. Accusative Morphology

Hikita (2013, 2015) revealed that the rules (21) and (22) affect not only the morphological forms of each word included in NP but also the syntax of the whole NP.

As in the following examples, Russian morphologically has three types of accusative forms: (i) a form peculiar to accusative (underlined), (ii) a genitive form (*italicized*), (iii) a nominative form (**in boldface**).

(27) (a) Kak zovut [tvoju mamu]? (RNC 23.07.2020)
how call-pr.3.pl your-acc.f.an. mother-acc.f.an.II
"What is your mother's name? (lit. How do they call your mother?)"

(b) (...) ja znaju [*ètogo čeloveka*]. (RNC 23.07.2020)
I-nom. know-pr.1.sg this-acc.m.an person-acc.m.an.I
"I know this person."

(c) (...) čitaem [**novyj žurnal**]. (RNC 23.07.2020)
read-pr.1.pl new-acc.m.in magazine-acc.m.in.I
"We are reading a new magazine."

Rules (23) and (24), together with rules (21) and (22), explain the so-called agreement in animacy in Russian. Rule (23) means that the gender features other than [m] and the inflectional type features other than [I] prevent genitivization, even if it has a feature [an][10]. In (27a), squared features [f] and [II] prevent genitivization, and (24) does not occur because the nouns of type II and the feminine agreeing modifiers do have their morphological forms peculiar to Acc. In (27b), nothing blocks genitivization; thus, both the agreeing modifier and the head noun are genitivized. In (27c) genitivization does not occur because of the feature [in], and then both the agreeing modifier and the head noun are nominativized by (24) because they (agreeing modifiers in masculine and type-I nouns) do not have morphological forms peculiar to Acc.

In most cases, the morphological pattern of the agreeing modifier and the head noun coincide, as in the aforementioned examples[11], but this is not always the case. (28) is an example of the morphological pattern in which an agreeing modifier and its head noun do not coincide.

(28) (a) (...) on videl [*ètogo* mužčinu] (...). (RNC 23.07.2020)
he-nom see-pa.m this-acc.m.an man-acc.m.an.II
"He saw this man."

(b) (...) ja ljublju [vašu **doč'**]. (RNC 23.07.2020)
I-nom love-pr.1.sg your-acc.f.an daughter-acc.f.an.II
"I love your daughter."

The noncoincidence is easily explained by the aforementioned rules. The agreeing modifier in

[9] By contrast, Hikita (2015: 72) concluded that (24) is purely morphological rule, because it does not affect the syntax of the nominal phrase, it affects only the morphological forms of the concrete words.
[10] The squared features in glosses are features blocking genitivization.
[11] This is why this phenomenon is often called "agreement in animacy".

(28a) has nothing that blocks genitivization, and the head noun does have a feature [II] that blocks genitivization. The head noun *mužčina* "man" has a morphological form peculiar to accusative; thus, nominativization does not occur. In (28b), both the agreeing modifier and its head noun have features that block genitivization. Notably, the feminine agreeing modifier has a special accusative form, but the head noun (type-III) does not; thus, nominativization of the former does not occur, while nominativization of the latter does.

The aforementioned rules also capture the descriptive fact that for some nouns, genitivization does occur in the plural, whereas in the singular it does not.

(29) (a) (...) ja (...) posetil [**odno** **lico**]. (RNC 23.07.2020)
I-nom visit-pa.m one-acc.n.an person-acc.n.an.I
"I visited one person."

(b) Vladimir Putin (...) kritikoval [*otvetstvennyx* *lic*]. (RNC 23.07.2020)
Vladimir_Putin-nom critisized-pa.m responsible-acc.pl.an person-acc.pl.an
"V. Putin criticized the people in charge."

In (29a), both the agreeing modifier and its head noun do have features that block genitivization, although in (29b) they have vanished because of (21).

In section 2, I show that these proposals insufficiently explain Russian descriptive facts and that some revision is necessary. In this brief discussion, I attempt to refine these rules and principles to achieve a higher degree of descriptive adequacy.

2. Some Examples of QP

In section 1, I have demonstrated that the rules work correctly at least for typical NPs. However, in the case of QP, the situation is somewhat complicated.

2.1. Multiple Agreement Controller

Hikita (2019) proposed (11) and (12) and claimed that because of those differences in features listed there each Q behaves differently.

As for "one", it does not have case-assignability; thus, nothing prevents phi-features from being transmitted from N. In other words, in this respect, the quantifier "one" behaves almost like an agreeing modifier, and it does not show any peculiar behaviors.

By contrast, NQs such as "million" behave almost like ordinary nouns. NQs assign Gen, but do not assign GenQ to the N; thus, there is only one case pattern, namely, heterogeneous.

(30) "million students"

(a)nominative environment

million studentov (RNC 23.07.2020)
million-nom student-gen.pl

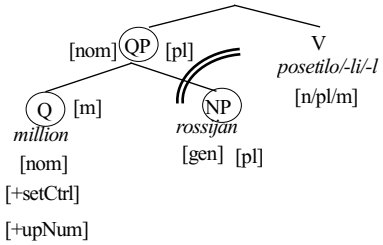
(b)oblique environment (dative)

millionu studentov (RNC 23.07.2020)
million-dat student-gen.pl

That is, the governed N is always in Gen and never agrees in case with the Q. [+upNum] and [+setCtrl] make it possible for the genitive N to control predicate agreement. Because the NQ "million" has a full set of phi-features and can be an agreement controller, the three variants of predicate agreement are possible:

(31) Million rossijan posetilo/ posetili/posetil Ameriku. (RNC 25.07.2020)
million-nom.m Russian-gen.pl visit-pa.n -pa.pl -pa.m America-acc
"Million Russians visited America."

(31')



All the three circled nodes can be controllers of predicate agreement. When NP is a controller, it actually cannot control the agreement because only nominative categories can control agreement in Russian. Thus, V is in default neuter form. When QP is a controller, because it receives the feature [pl] from N because of [+upNum], the verb shows plural agreement. When Q is a controller, because it is a masculine noun, the verb shows masculine agreement. In this manner, by postulating multiple agreement controllers we can account for the descriptive facts that QP subjects can result in more than one pattern of predicate agreement.

2.2. Accusative Morphology

Because the NQ "million" has the features [−upAni] and [in], the NQ and the agreeing modifier that agrees with the NQ are always in nominative-accusative form when in an accusative environment[12].

(32) (a) (...) terjali million graždan (...) (RNC 23.07.2020)
lose-pa.pl million-nom/acc.m citizen-gen.pl
"They lost million citizens."

(b) (...) rasstreljali odin million čelovek(...) (RNC 23.07.2020)
shoot-pa.pl one-nom/acc.m million-acc/nom.m person-gen.pl
"They shot million people."

The quantifier "three" can have an agreeing modifier agreeing in the plural because it has [+horNum].

(33) (...) èti tri sem'i (...) (RNC 23.07.2020)
this-nom.pl three-nom family-genq.pc
"these three families"

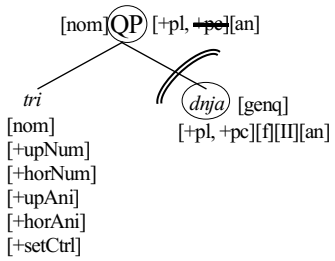
Because [+pc] can be preserved only in GenQ, [+pl, +pc](= paucal) on the nominative agreeing

[12] Hereafter, Acc which was genitivized by (23), and Acc, which was nominativized by (24), are glossed as "gen/acc" and "nom/acc", respectively.

modifier *èti* must become [+pl](= plural) because of (20). The Q "three" also has [+upNum] and [+setCtrl], and as a result, both plural and neuter predicate agreement are possible:

(34) (a) Prošli / Prošlo tri dnja (...) (RNC 23.07.2020)
pass-pa.pl -pa.n three-nom day-genq.pc
"Three days have passed."

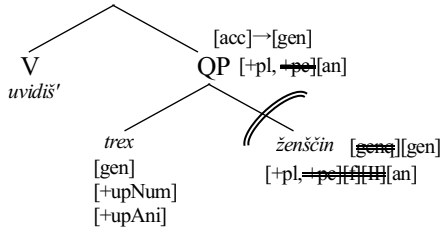
(b)



Unlike NQ "million", PcQ "three" does not have a full set of phi-features; thus, the PcQ cannot be a controller of predicate agreement. Only the two variants of predicate agreement are possible, that is, in (34b), only the circled nodes can be controllers of predicate agreement. Further, the Q "three" has [+upAni] and [+horAni], and it shows genitive-accusative morphology.

(35) (a) (...) uvidiš' trex ženščin (...) (RNC 23.07.2020)
have-pa.m three-gen/acc woman-gen/acc.pl.an
"You will see three women. "

(b)



When the Q and the N merge, the Q assigns GenQ to the N that is in paucal number, and then there appears a case boundary above the N. Because the Q has [+upNum] and [+upAni], the number and animacy features go up to QP. On merging with V, the QP obtains [acc] from V; then, [+pc] is deleted because a paucal number cannot be preserved in cases other than GenQ. According to (23), [acc] is rewritten to [gen]; then it percolates down to the terminal nodes. The feature [+pc] must vanish because it cannot be preserved in Gen. And last, [f] and [II] are deleted by rules (21) and (22).

There is a problem with PcQ "two": the PcQ "two" has an empty slot for gender [ø], which "three" and "four" do not. The existence of a gender feature raises a complex problem for the description of this PcQ. In section 3, I discuss this problem.

3. The Quantifier "Two" and the Gender Feature

Among the so-called PcQs, "two" is different from "three" and "four" in that it retains, though only

partially, morphological gender opposition[13].

(36) dva mal'čika / dva pis'ma / dve devočki
two-nom.−f boy-genq.pc.−f two-nom.−f letter-genq.pc.−f two-nom.+f girl-genq.pc.+f
"two boys / two letters / two girls"

The problem that this fact poses will be discussed in the following subsections.

3.1. Pluralia Tantum and Collective Numerals

Rule (21) states that gender feature is deleted when in plural, and correctly predicts that in paucal, gender opposition is preserved. As is shown in (11), Hikita (2019), by comparing the following examples, concluded that PcQs have a lexically predetermined number feature [+pl, +pc]:

(37) (a) *dva / *dve sutok
two-nom.–f two-nom.+f day-genq.pl
(b) dvoe sutok
two-nom. day-genq.pl
"two days"

The quantifier *dvoe* in (37b) is a so-called "collective numeral" and can be combined with a plurale tantum *sutki*. Because of (21), all the plural words cannot have gender feature; therefore, pluralia tantum has no gender features at all (see for example, Miloslavskij 1988: 11–12 and also Zaliznjak 2002: 79–80). Although both types of numerals express the same quantificational notion, PcQs cannot combine with pluralia tantum, but collective numerals perfectly can. The difference in combinability is due to the lexically determined number feature of the plurale tantum, which has neither a singular nor paucal form. (37a) is ungrammatical because the number feature of PcQ and N cannot match, and PcQ's gender slot cannot be filled. In other words, the paucal form of the N after PcQ is not semantically determined, but formally determined.

Moreover, the case assigned to N by the collective numeral is GenQ, but not ordinary Gen. GenQ assigned by collective numerals can be overwritten by Lexical cases, but not by Nom or Acc. An example in the Nom (and Acc) environment is (37b). An example in Lexical case environment is the following:

(38) (a) dvoim prijateljam (RNC 27.07.2020)
two-dat friend-dat.pl
"for two friends"
(b) s dvoimi bratiškami (RNC 27.07.2020)
with two-ins brother-ins.pl
"with two brothers"

This case pattern is same as that of (8), where Q assigns GenQ to N. It implies that the collective

[13] I refer to Mitsui (2016) and assume that Russian gender features comprise two features [±m, ±f], where [+m, –f] = masculine, [−m, −f] = neuter, and [−m, +f] = feminine; although, for the sake of simplicity, they are glossed as "m", "n", and "f" respectively. Further, the gender of a paucal noun is morphologically manifested only partially, namely, the opposition of masculine and neuter is lost. Morphology shows only the distinction between feminine and nonfeminine. Thus, I assume that in paucal the feature [±m] is lost and there remains only one feature: [±f]. In such cases, gender is indicated in the gloss as "+f"(= feminine) or "−f"(= nonfeminine).

numerals are also assigners of GenQ. That is, the difference in acceptability of (37a, b) is not due to the difference in case, and I must conclude that the number feature of PcQ [+pl, +pc] is predetermined in the lexicon, not syntactically received.

3.2. The Case of PcQ

Based on my research thus far, I pose this question: Why is gender of the PcQ "two" not deleted in a case environment other than GenQ. Rule (20) states that [+pl, +pc] is rewritten as [+pl] in a case environment other than GenQ, and (21) states that the gender feature is deleted in the plural. These rules imply that the PcQ "two" in (36) cannot show gender opposition because they are all in Nom. In cases other than GenQ, their gender feature cannot remain undeleted.

3.2.1. Hikita (2018)

To eliminate the inconsistency, Hikita (2018) hypothesized that inherent features are undeletable. Because in (11) the assumption is that the number feature [+pl, +pc] of PcQs was predetermined in the lexicon such as gender or animacy of nouns, the aforementioned hypothesis implies that this feature cannot be deleted. As a result, rule (21) is rejected. This hypothesis is supported by the recoverability condition stated in Chomsky (1965: 177) as follows:

(39) (...) deletions must be recoverable.

This condition has been considered a part of Universal Grammar, and if it were not for the recoverability condition, there would occur a state of affairs, which Fiengo & Lasnik (1972) illustrated.

By contrast, the number feature of quantifiers, if any, should be considered uninterpretable unlike that of nouns: they do not affect the sentences' interpretation (Chomsky 1995: 277–279).

There is another descriptive problem with this analysis. The quantifier "two" never shows gender distinction morphologically in Lexical cases:

(40) "two boys / two girls" (RNC 28.07.2020)

(a)Nominative:	dva mal'čika /	dve devočki
	two-nom.-f boy-genq.pc.−f	two-nom.+f girl-genq.pc.+f
(b)Dative:	dvum mal'čikam/	dvum devočkam
	two-dat boy-dat.pl	two-dat girl-dat.pl
(c)Instrumental:	dvumja mal'čikami/	dvumja devočkami
	two-ins boy-ins.pl	two-ins girl-ins.pl

As is illustrated in (40), in Lexical cases morphological gender opposition is lost. If I adopt the aforementioned hypothesis, in Lexical cases grammatical features distinguish gender distinction, which is not attested morphologically. That is, an abstract conceptual feature set incorrectly predicts the word's form, which is never morphologically attested. I consider that abstract feature set and its morphological appearance should be in one-to-one correspondence if possible[14].

Furthermore, the hypothesis wrongly predicts that the Lexical case form of (37a) is ungrammatical.

[14] Of course, I never deny the existence of syncretism in Russian.

(41) dvumja sutkami (Zaliznjak 1964: 35)
two-ins.pc.[gender ø] day-ins.pl
"two days"

If [+pc] and, consequently the gender feature was not deleted, (41) would be wrongly predicted to be ungrammatical. The gender slot remains empty, because the pluralia tantum does not have its own gender, or transmit it to Q. Notably, (41) is perfectly grammatical: PcQs can co-occur with pluralia tantum in a Lexical case environment, but not in Structural case environment.

3.2.2. Hikita (2019)

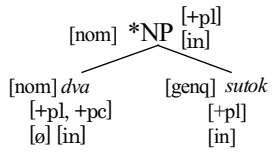
Hikita (2019: 121) instead of (20) postulated another rule:

(42) [+pl, +pc]→[+pl, ø] if [+Lex]

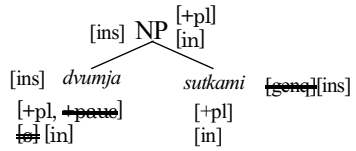
In other words, when the element is in cases other than Nom, Acc, and GenQ, a paucal number becomes plural. Consequently, a gender feature is deleted because in plural gender feature cannot be preserved.

Rule (42) can correctly predict differences in grammaticality between (37a) and (41).

(37a')



(41')



In (37a'), [nom] percolates down to the Q, and in the Structural case environment the number feature [+pl, +pc] and the gender slot are not deleted, and it must be filled with a gender value copied from the N, which is impossible because the pluralia tantum does not have a gender feature. As a result, in the nominative or accusative environment the PcQ "two" with a pluralia tantum is ungrammatical, which is a correct prediction. By contrast, in (41'), the instrumental case is percolated down to both of the terminal nodes and rules (42) and (21) correctly delete [+pc] and the gender slot respectively. Because the gender slota nolonger exists, gender transmission from the plurale tantum is not necessary. In this manner (42) correctly predicts the linguistic fact.

This analysis, however, also poses a problem. As Hikita (2019: 121) mentioned, rule (42) also produces "undesirable" syncretic forms. If (42) is correct, the same plural forms of nouns must always represent two possible number feature sets—[+pl] and [+pl, +pc]—although nouns never distinguish morphologically paucal and plural forms in cases other than GenQ.

(43) koški; sobaki; studenty; karandaši ...
cat-nom.pl/pc dog.nom.pl/pc student-nom.pl/pc pencil-nom.pl/pc
"cats; dogs; students; pencils..."

In (43), all the nouns in plural form but could be in paucal forms, although plural/paucal distinction is never morphologically expressed except in GenQ. If one-to-one correspondence between abstract grammatical feature sets and their morphological form is better than many-to-one, this analysis is undesirable. Additionally, it is even uneconomic to assume abstract features hidden behind concrete forms in which conceptual distinction is never attested morphologically.

3.3. Preassigned GenQ

Hikita (2019) suggested the possibility of assuming that PcQs have a case feature [genq] "preassigned" in the lexicon before they go into syntax. In the following section, I examine this possibility from several perspectives.

3.3.1. Historical Background

Unlike in MR, in Old Russian (OR), paucal numerals were adjectives and agreed in case and number with head nouns. Subsequently, when the dual number vanished from the language, the feature [nom.du] of N was reanalyzed as [gen.sg] and the Q lost number opposition. That is, in the history of the Russian language, (44a) was reanalyzed as (44b):

(44) (a) OR: "2"[nom.du] + N[nom.du]
(b) MR: "2"[nom] + N[gen.sg.]

(See, e.g., Ivanov 1983, Kolesov 2009, Černyx 2010, Babby 1987, Hara 1996b, Mitani 1998, Sato 2012, Inoue 2019 for details.)

As aforementioned, Hikita (2010), based on Akiyama (2002), concluded that [gen.sg] of the N should have been reinterpreted as [genq.pc], and Hikita (2018) also claimed that the Q should be interpreted as having paucal number feature inherently. That is, Hikita (2018) claimed that (45a) was reanalyzed into (45b):

(45) (a) OR: "2"[nom.du] + N[nom.du]
(b) MR: "2"[nom.pc] + N[genq.pc]

These reanalyses occurred because of the loss of the dual number (Borkovskij & Kuznecov 2004: 243). Notably, MR lost agreement in case between Q and N, which existed in OR. If [nom.du] of N was reanalyzed to be [genq.pc], and if agreement relation in this construction was not lost in the history of this language, it is possible for the set of features in Q to change also into [genq.pc]. Thus, the hypothesis I suggested in Hikita (2019), that is, the quantifier "2" has a case feature [genq] preassigned in the lexicon, is plausible.

Thus, "three" and "four", which were also adjectives, have changed in the same manner as "two" , and they were assimilated to each other in many respects. Additionally, by the second half of the 18th century, morphological paradigms of these three numerals have been unified (Ivanov 1983: 291, Borkovskij & Kuznecov 2004: 248, Buslaev 2009: 188−189, Černyx 2009: 232−235, Inoue 2019: 51). If they have been unified into one category, then it is natural to assume that preassigned GenQ also has spread over 'three' and 'four'. This assumption has an important implication for the discussion presented in subsection 4.4.2.

In the following sections I examine the preassigned GenQ hypothesis in detail.

3.3.2. Theoretical Consistency with Earlier Works

I have demonstrated that by postulating GenQ preassigned in the lexicon, I can explain why morphological gender opposition is not lost in QP in nominative environment. In this subsection, I

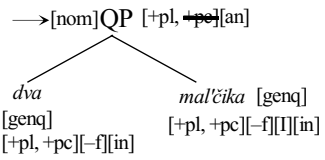
examine whether my hypothesis is consistent with the explanations of Russian nominal phrases in Hikita (2007, 2010, 2013, 2015, 2017, 2018, 2019). In the following subsections I demonstrate that my new hypothesis never affects the effect of my system, which has been postulated in my earlier works (Hikita 2007, 2010, 2013, 2015, 2017, 2018, 2019). The postulation of preassigned GenQ on PcQ "2" does not prevent the rules from working correctly.

3.3.2.1. Lexical Case Environment

In subsection 1.1.5., on the basis of Babby (1987), I showed how case patterns in (8) can be predicted by case hierarchy (7) and the locality principle. The assignment of Lexical cases (Genitive, Locative, Dative, Instrumental) takes precedence over that of Structural cases (Nom, Acc, GenQ); thus, Lexical cases overwrite GenQ on N; by contrast, Nom or Acc cannot do that, because of the locality principle.

(46) (a) dva mal'čika
two-nom.−f boy-genq.pc.−f
"two boys"

(b)

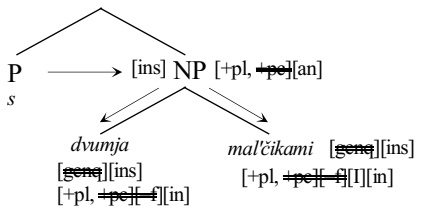


In (46), Nom is assigned from somewhere outside the phrase and cannot percolate down to each terminal node because the N has GenQ assigned by the Q and the Q lexically has preassigned GenQ. These GenQ prevent Nom from percolating down to the terminal nodes.

By contrast, in a Lexical case environment the case assigned to the topmost node by the preposition percolates down to the terminal nodes, because, as was stated in hierarchy (7), Structural case cannot stop the Lexical case's percolation.

(47) (a) s dvumja mal'čikami
with two-ins boy-ins.pl
"with two boys"

(b)



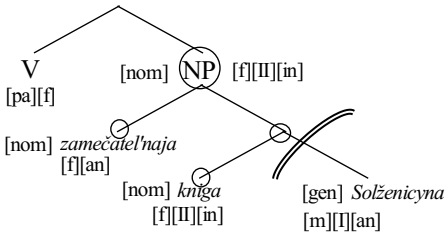
In this case, nothing stops the percolation of Ins, which is higher than GenQ in hierarchy (7). In this manner, if I analyze that PcQs has preassigned GenQ in the lexicon, my theory—all the same—predicts the correct forms of QP in the Structural or Lexical case environment. The only difference

between the old and new version of my theory is the case postulated on the PcQ *dva* in a nominative environment. But the revision does not affect the descriptive implication of the theory.

3.3.2.2. Predicate Agreement

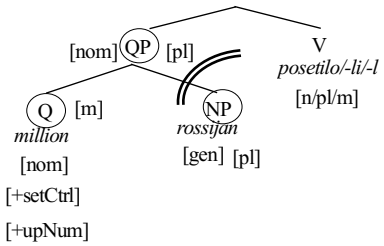
In subsection 1.1.7, I claimed that in typical NPs there can be more than one predicate agreement controller, and that whichever is chosen, it works equally.

(48)(=14)



In (48), all the circled nodes can be a controller of predicate agreement and work equally, because they have the same set of phi-features for predicate agreement. By contrast, in the case of QP, the possible controllers may have different sets of phi-features, this makes more than one predicate agreement pattern possible.

(49)(=31')

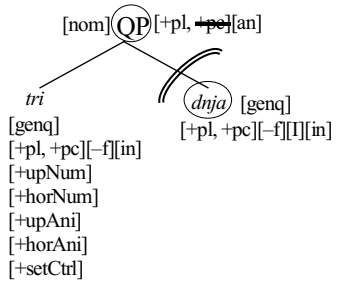


In this case each circled node controls predicate agreement differently, because each has a different set of features.

What will occur, if I postulate preassigned GenQ on PcQs? Nothing. GenQ on Q never prevents my system from working and predicting the correct agreement variants.

(50) (a) (...) prošli / prošlo tri dnja (...). (RNC 31.07.2020)
pass-pa.pl -pa.n three-genq.pc. day-genq.pc.–f
"Two years have passed."

(b)



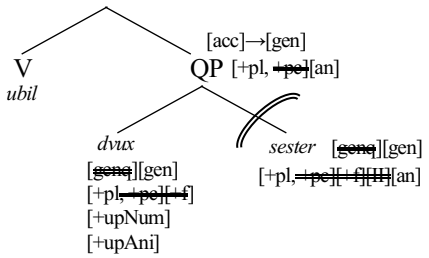
Nom assigned to the topmost QP node cannot percolate down to Q and N because both nodes already have GenQ: one node has it lexically, and the other received it syntactically from the Q. The Q cannot be a controller of predicate agreement, because it does not have enough phi-features to be a controller. The N *dnja* can be a controller, because the Q *tri* has [+setCtrl]; however, because it is not in Nom, the predicate cannot agree with it. As a result, the predicate is in neuter form.

3.3.2.3. Accusative Morphology

In case of PcQs, I consider in (35) that genitivization of Acc occurs at the topmost node of the phrase. (12) and (23) correctly predict the surface morphological form of QP with PcQ. If I postulate that GenQ is preassigned in the lexicon, genitivizing rule (23) nonetheless works perfectly and predicts the correct morphological form of the QP.

(51) (a) (...) on ubil dvux sester. (RNC 04.08.2020)
he-nom kill-pa.m two-gen/acc
"He killed two sisters."

(b)



In (51), Acc is assigned to the topmost QP node, and is genitivized by (23). Thus, Acc percolates down to the terminal nodes and overwrites GenQ on the Q and the N.

By contrast, when the N is inanimate, (23) and (24) also make a correct prediction. By (24), I mean that [acc] must be nominativized when the lexical item does not have a special accusative form. For example, in (a) of the following example, case features [acc] on the agreeing modifier and the N in the direct object NP are nominativized, because they do not have special accusative forms. By contrast, in (b), they are not nominativized, because they have special accusative forms[15].

(52) (a) (...) kupim novyj stol (...) (RNC 04.08.2020)
buy-pr.1.pl new-nom/acc.m desk-nom/acc.m
"We are going to buy a new desk."

(b) Ja vypuskaju novuju knigu. (RNC 04.08.2020)
I-nom publish-pr.1.sg new-acc.f book-acc.f
"I publish a new book."

Further, both *stol* and *knigu* are inanimate nouns; thus, genitivization (23) does not occur.

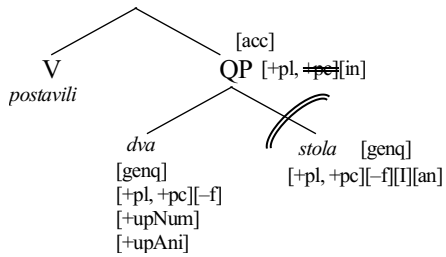
In the case of QPs, (23) and (24) also make a correct prediction.

(53) (a) (...) my postavili dva stola. (RNC 04.08.2020)
we-nom place-pa.pl two-genq.−f desk-genq.−f

[15] In Russian, it is singular type-II nouns and feminine agreeing modifiers that have special accusative forms.

"We placed two desks."

(b)



Because the QP node receives [in] from the inanimate N *stola*, genitivization (23) does not occur there, unlike in (51). Nominativization (24) also does not occur, because neither *dva* nor *stola* is in Acc, but they are in GenQ.

Thus, the postulation of preassigned GenQ does not contradict Hikita's earlier works' premises.

4. Distributive *Po*-phrase

When preposition *po* occurs with QP, it has a distributive meaning[16].

(54) Studenty polučili po sto rublej.
student-nom.pl receive-pa.pl dist hundred-acc? rouble-genq?.pl
"The students received hundred roubles each."

(55) Oni spali po dva časa.
they-nom sleep-pa.pl dist two-acc? hour-genq?.pc
"They slept two hours each."

It not only poses many interesting and difficult problems for Russian linguistics, but also gives interesting implications for our hypothesis.

4.1. Descriptive Overview

First, I present the examples in (56), which are in accusative environment:

(56) (a) po odnomu rublju (Franks 1995: 140)
dist odin-dat? rouble-dat?
"one rouble for each"

(b) po dva rublja (Franks 1995: 140)
dist two-acc? rouble-genq.pc
"two roubles for each"

(c) po pjat' rublej (Franks 1995: 140)
dist five-acc? rouble-genq.pl
"five roubles for each"

(d) po pjati rublej (Franks 1995: 140)
dist five-dat? rouble-genq.pl

[16] Since it is impossible to show literal translation of this preposition in English, an abbreviation "dist" will be given in glosses.

"five roubles for each"

(e) po millionu rublej (Franks 1995: 142)
dist million-dat?sg rouble-gen.pl
"million roubles for each"

At first glance, the case assigned by *po* seems to vary by the Q of the assignee QP. Notably, what case is assigned in (56) remains unclear. Thus, for now, "?" is added to case information in glosses. Additionally, I focus on the following: when Q is "five", there can be two variants of Q's case forms: *pjat'* and *pjati* (see, e.g., Vinogradov 1972, Crockett 1976, Švedova et al. 1980, Mel'čuk 1985, Franks 1984, Hara 1996a, Rozental' 1998, Wade 2002, Bel'čikov 2008, Bailyn 2012). Although the distributive *po* poses other problems, in this paper the following two questions are discussed:

(57) (a) What case does *po* assign to the QP?
(b) Why are there two possible morphological variants for "five"?

4.2. The Case Assigned by Distributive *Po*

In the aforementioned examples, it seems plausible to analyze that *po* assigns Dat in (56a, e), whereas in (56b, c) it should be Acc (see, e.g., Wade 2002; 472, Rozental' 1998: 157). However, this phenomenon is not as simple as it seems (although that one and the same preposition assigns two different cases is sufficiently complicated and mysterious).

If the N in (56b) is animate, the case *po* assigns is not Acc:

(58) po dva studenta
dist two-acc? student-genq.pc
"two students for each"

The case assigned by *po* cannot be Acc, because the accusative form of "two students" must be in Gen/Acc form. In (59) preposition *pro* "about" assigns Acc:

(59) pro dvux studentov (RNC 05.08.2020)
about two-gen/acc student-gen/acc.pl
"about two students"

Because of this, Zaliznjak (2002: 51) claimed that the case assigned by *po* in (58) is not Acc, but Nom, which is unimaginable because there can be no prepositions assigning Nom in Russian[17].

The second variant of "five" in (56d) also poses a serious problem. What case is assigned to the quantifier "five"? The most plausible candidate for the case of the form *pjati* is Dat, as Rozental' (1998: 157) stated, because *po* clearly assigns Dat in (56a, e)[18]. However, this account is questionable because (56d) shows that the N after Q is in GenQ, but not Dat. As was demonstrated in (8), Q and N in QP "five"+N in a dative environment must be in Dat; this is why Mel'čuk (1985) and Neidle (1988: 165),

[17] Perhaps, the only exception can be *čto za* "what sort of" (lit. "what for").
Čto èto za ženščina?
what this-nom for woman-nom
"What kind of woman is this?"

[18] *Pjat'* belongs to the 3rd declension type and declines as: Nom: *pjat'*, Acc: *pjat'*, Gen: *pjati*, Loc: *pjati*, Dat: *pjati*, and Ins: *pjat'ju*. That is, Gen, Loc and Dat are syncretic.

Timberlake (2004: 202) assume, though without a detailed discussion, that the case of QP here is not Dat but Gen.

In summary, there are four candidates for the case that *po* assigns to QP: Dat, Acc, Nom, and Gen. Is there a unified account for these complex behaviors? In the following sections, I attempt to answer this question.

4.3. Two Variants: *po pjat'/pjati*

Simplex numerals from "five" to "hundred" (HQs) often have been reported to have two morphological variants after distributive *po*: seemingly Nom or Acc and Dat or Gen (see, e.g., Vinogradov 1972, Crockett 1976, Švedova et al. 1980, Mel'čuk 1985, Franks 1984, Hara 1996a, Rozental' 1998, Wade 2002, Bel'čikov 2008, Bailyn 2012). Nom and Acc form, and Dat and Gen form: of these, HQs are syncretic. That is, *pjat'* can be a Nom or Acc form, and *pjati* a Dat or Gen form. In the remainder of this paper, I refer to seemingly nominative/accusative forms as Direct, and seemingly dative/genitive forms as Oblique.

Vinogradov (1972: 240), Hara (1996a: 166), Timberlake (2004: 201–203), and Harves (2003: 236) have stated that Oblique forms are old and Direct forms new. Timberlake (2004: 203) stated:

(60) "The future for all numerals (except singleton units) is the Direct (NOM=ACC) case form."

The direction of diachronic change from Oblique to Direct also can be observed in Russian National Corpus. In (61) the numbers of search results for "*po pjati* + $N_{[gen.pl]}$" and "*po pjat'* + $N_{[gen.pl]}$" are summarized:

(61)

	results dated to:			
	18th c.	19th c.	20th c.	21st c.
po pjati + $N_{[gen.pl]}$	53	246	160	9
po pjat' + $N_{[gen.pl]}$	2	13	304	157

In (61), the number of Direct variants is increasing, and the number of Oblique variants is decreasing[19]. Additionally, some young native speakers (in mid-twenties and early-thirties) I consulted even rejected Oblique variants as ungrammatical.

I consider that the two coexisting morphological variants—older *po pjati* and newer *po pjat'*—reflect the ongoing linguistic change in the Russian language. But what changes? What type of grammatical/lexical change leads *po pjati* to *po pjat'*? In the following sections, I discuss the grammatical change ongoing in Russian, and demonstrate that the lexically preassigned GenQ that I have postulated will be a key to answering this question.

4.4. Preassigned GenQ on HQs

[19] Notably, only 20 % of the 21st century has passed.

I hypothesize that the ongoing linguistic change from *po pjati* to *po pjat'* is due to the change in which preassigned GenQ is spreading from PcQs to HQs. In this subsection, I examine the probability of preassigned GenQ on the HQs. Is it probable that HQs have GenQ preassigned in the lexicon?

4.4.1. Franks (1995) and Dative of Quantification

Before examining my hypothesis, I review how Franks (1995) attempted to explain the descriptive facts of distributive *po*.

Franks (1995: 140–157) accounted for the difference between Direct/Oblique patterns by postulating the Dative of Quantification (DatQ) and two structures.

DatQ is a Structural case assigned solely by distributive *po*. Because DatQ is Structural, it cannot percolate to *rublej* in (62):

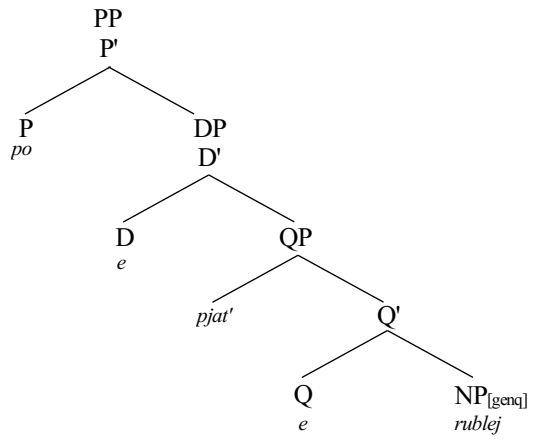
(62) po pjat' rublej (Franks 1995: 140)
dist five rouble-genq.pl
"five roubles for each"

DatQ is blocked by more local case assigner Q, which assigns GenQ to the N. By contrast, Franks (1995) considered that Q in this case is caseless or frozen. But what about the following Oblique variant?

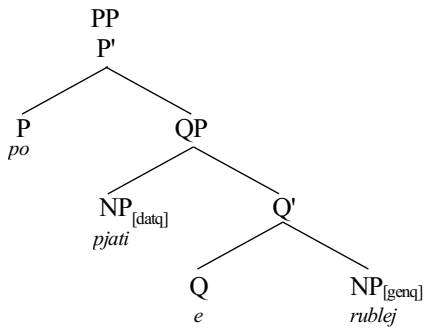
(63) po pjati rublej (Franks 1995: 140)
dist five-datq ruble-genq.pl
"five roubles for each"

Franks (1995) ascribed the difference between Direct and Oblique case patterns to different syntactic structures:

(62')



(63')



In (63'), DatQ is assigned to *pjati* by Exceptional Case Marking (ECM). Because by ECM case is assigned to the specifier of the complement, *pjati* must be in the specifier position of QP, but not in the head. By contrast, in (62'), DatQ cannot be assigned to *pjat'*, because it is not in the specifier position of the complement. In this manner, Franks (1995) ascribed the Direct/Oblique difference to two structures: DP and QP.

However, this ascription poses some questions: Why in case of "two" can there be only the DP pattern, and in case of "thousand" only QP?

(64) po dva rublja (Franks 1995: 140)
dist two rouble-genq.pc
"two roubles for each"

(65) po tysjače rublej (Franks 1995: 142)
dist thousand-datq rouble-gen.pl
"thousand roubles for each"

Furthermore, why is the QP pattern in the case of "five" is diachronically decreasing? Although Franks (1995) postulates DP and QP structures also for these phrases in other environments, it is impossible to ensure that QPs are decreasing.

In the following section, I argue that my preassigned GenQ hypothesis and the DatQ postulated by Franks (1995) account for the behaviors of *po*-phrases and their historical change.

4.4.2. Preassigned GenQ and *Po*-phrase

In subsection 3.2, lexically preassigned GenQ on PcQ was postulated and its implication for Russian grammar was examined. I proved that preassigned GenQ does not contradict the earlier proposals, and the morphological forms of the following examples are correctly accounted for.

(66)(=46a) dva mal'čika
two-nom.−f boy-genq.pc.−f
"two boys"

(67)(=47a) s dvumja mal'čikami
with two-ins boy-ins.pl
"with two boys"

(68)(=51a) (...) on ubil dvux sester. (RNC 04.08.2020)
he-nom kill-pa.m two-gen/acc sister-gen/acc.pl

"He killed two sisters."

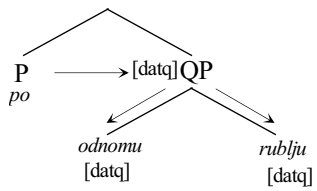
(69)(=53a) (...) my postavili dva stola. (RNC 04.08.2020)
we-nom place-pa.pl two-genq.–f desk-genq.–f
"We placed two desks."

That is, the morphological forms of QPs with PcQs in a nominative environment (66), in Lexical case environment (67), in an accusative environment and animate (68), and in an accusative environment and inanimate (69) are all correctly predicted.

Thus, are the problems of *po*-phrase affected if our hypothesis is correct? I accept Franks (1995)'s proposal on the case which *po* assigns: the case distributive *po* assigns is DatQ, which is Structural. How can these hypotheses account for the behaviors of *po*-phrases?

(70) (a) (=56a) po odnomu rublju (Franks 1995: 140)
dist odin-datq rouble-dat?
"one rouble for each"

(b)

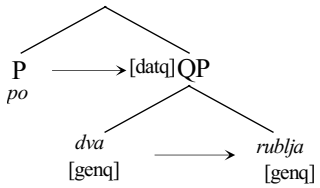


The numeral "one" does not assign case; thus, nothing prevents DatQ from percolating down to the terminal nodes.

By contrast, in the case of "two", GenQ assigned to N by PcQ and preassigned GenQ on PcQ block DatQ's percolation, because of the locality principle.

(71) (a) (=56b) po dva rublja (Franks 1995: 140)
dist two-genq rouble-genq.pc
"two roubles for each"

(b)



When the Q is "three" or "four", preassigned GenQ also correctly predicts that the PcQ must be in Direct form, though, unlike "two", they do not have gender opposition.

(72) (a) (...) po tri ošibki (...) (RNC 15.08.20)
dist three-genq.pc mistake-genq.pc
"three mistakes for each"

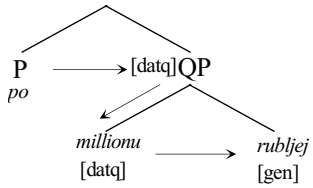
(b) (...) po četyre dollara (...) (RNC 15.08.20)
dist four-genq.pc dollar-genq.pc
"four dollars for each"

In (72), preassigned GenQ blocks the percolation of DatQ, which correctly predicts the Direct forms of the PcQs.

Furthermore, in case of "million" and other NQs, DatQ can percolate down to Q, but not to N.

(73) (a) (=56e) po millionu rublej (Franks 1995: 142)
dist million-datq.sg rouble-gen.pl
"million roubles for each"

(b)

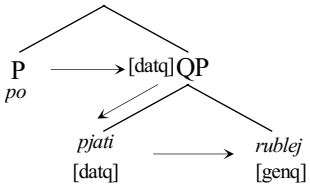


NQs do not have preassigned GenQ; thus, nothing can block the percolation of DatQ from the topmost node. By contrast, the N has Gen assigned by the Q, and it blocks the percolation of DatQ.

Among the two variants of "five" Oblique form can be accounted for straightforwardly. Similar to the NQ "million", HQs do not have case preassigned; thus, DatQ assigned to the topmost QP can percolate down to *pjati*. However, it cannot percolate down to *rublej* because it has already received GenQ from Q.

(74) (a) (=56d) po pjati rublej (Franks 1995: 140)
dist five-datq rouble-genq.pl
"five roubles for each"

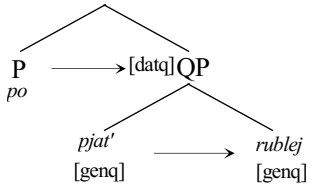
(b)



How can we account for the Direct case pattern with "five"? I assume that preassigned GenQ is spreading (or has spread) from PcQs to HQs. If "five" has preassigned GenQ as PcQ has, my theory predicts that it shows Direct case morphology.

(75) (a) (=56c) po pjat' rublej (Franks 1995: 140)
dist five-acc? rouble-genq.pl
"five roubles for each"

(b)



Preassigned GenQ on *pjat'* blocks the percolation of DatQ down to *pjat'*, and GenQ assigned by *pjat'* to *rublej* also blocks the percolation of DatQ to *rublej*.

In other words, I assume that Russian HQs are changing (or have changed at least for some native speakers). Although old HQs did not have preassigned case value and they had only an empty case slot that must be filled syntactically, new HQs have preassigned GenQ, that is, they have a case slot filled

with the case value [genq] previously determined in the lexicon[20]. The question I now must ask is: Is such a diachronic change possible? In the next section, I attempt to answer this question.

4.5. Historical Change Russian Quantifiers Have Undergone

In the earlier stage of Russian language, PcQs "two", "three", and "four" were adjectives that agreed with their head nouns. Further, "two" agreed with its head noun in dual, and "three" and "four" in the plural (see, e.g., Mitani 1998: 10, Inoue 2019: 4, Buslaev 2009: 188, Sato 2012: 79, Černyx 2011: 235, Borkovskij & Kuznecov 2004: 248). By the 16th century the dual number was lost (Inoue 2019: 5, Hara 1996b: 244), which triggered further change in Russian numerals.

In relation to the loss of dual, PcQs have undergone further changes. In subsection 3.3.1, I showed that the following construction in OR (a) was reanalyzed in MR as (b):

(76) (=44) (a) OR: "2"[nom.du] + N[nom.du]
(b) MR: "2"[nom] + N[gen.sg.]

This reanalysis also has spread to "three" and "four", and eventually they were unified as to the morphological paradigm.

Furthermore, in subsection 3.3.1, I claimed that the result of this reanalysis in MR should instead be considered as follows, where GenQ on PcQ is not assigned syntactically but preassigned in the lexicon:

(77) MR: PcQ[genq.pc] + N[genq.pc]

If in OR PcQ agreed with N and had the same set of phi-features, it is plausible MR reanalysis should provide the same result both on PcQ and N.

This historical change also implies that PcQs began to assign GenQ to N they modify. That is, they became case assigners. Inoue (2019: 5) stated that these changes occurred in and after the 16th century.

HQs also underwent grammatical changes in and after the 16th century. They were nouns and had their own gender value, but later, they lost their gender (Babby 1987: 102, Černyx 2010: 236, Inoue 2019: 5). In (78), there is an OR example:

(78) ta pjat' dnej (Babby 1987: 102)
that-nom.f five-nom.f bottle-gen.pl
"those five bottles"

In MR the demonstrative pronoun should be in plural form, not singular feminine, because the HQ has lost its gender feature.

Moreover, in OR, HQs are assigned Gen, but not GenQ. When the QP is in a non-Structural case environment, it can be easily observed5:

[20] Inoue (2019: 53) reported that in OR *po* not only requires PcQs to be in Direct form, but also N to be in nominative/accusative, although HQs after *po* must be in Oblique form. Apparently, *po* governed two cases in OR. Further research is necessary to know the precise grammatical properties of *po* in OR.

(79) Old Russian (Babby 1987: 103)

(a) toju pjat'ju butylok
that-ins.f five-ins.f bottle-gen.pl

(b) *toju pjat'ju butylkami
that-ins.f five-ins.f bottle-ins.pl

As stated in subsection 1.1.5, Lexical case takes precedence over Structural case; thus, if the case on *butylok* is Strucutral, Ins overwrites the previously assigned Strucutural case. However, (a) is grammatical and (b) is ungrammatical in OR. Thus, in OR, the case that HQs assign to N was Lexical case, that is, Gen. By contrast, in MR, where HQs assign Structural case, that is, GenQ, (a) is ungrammatical and the case pattern in (b) is grammatical.

In summary, (i) PcQs have started to assign GenQ to N and (ii) the case HQs assign to N has changed from Lexical Gen to Structural GenQ. In other words, PcQs have lost some of their adjectival properties and HQs their nominal properties[21].

As reviewed in 1.1.1, Corbett (1978a, b) showed that Russian numerals constitute a continuum that spreads between adjectives and nouns. If so, those historical changes I assumed imply that PcQs and HQs have assimilated (or are assimilating) to each other, perhaps to establish some new category (See also Stepanov & Stateva 2016: 791), namely, a quantifier.

(80)

Adjective	*odin* 'one'	PcQ→	Quantifier	←HQ	*tysjača* 'thousand'	Noun

PcQs and HQs are assimilating to each other in (80), that is, PcQs and HQs have GenQ-assignability, and according to my hypothesis, have (or started to have) preassigned GenQ. Thus, I can plausibly assume that GenQ-assignability leads to preassigned GenQ, although it remains unclear why these seemingly independent phenomena are related.

4.6. Other Examples

In this subsection, I provide other types of examples that support the validity of preassigned-GenQ hypothesis.

4.6.1. Accusative Morphology of *Po*-phrases

Babby (1985b, 1986) and Wade (2002: 473–474) have demonstrated that *po*-phrases in principle can appear only in nominative and accusative environments[22].

(81) *Oni zanimajutsja po tri jazyka.
they-nom study-pr.3.pl dist three-genq language-genq.pc

[21] Adjectives in Russian usually agree with their head noun, and nouns usually assign Gen to their nonagreeing modifier noun.

[22] Pesetsky(1982: 72) claimed that *po*-phrases must be a sister to VP at D-structure, and cannot occur in positions where the Oblique case is required. King(1995: 40), by contrast, stated that *po*-phrases cannot appear as a subject of transitive verbs or of unergative verbs. In what environment *po*-phrases can appear must be studied in detail in further research.

"They study three languages for each."

The verb *zanimat'sja* "study" requires Ins on its objects. Because Ins is a Lexical case, the sentence (81) is ungrammatical[23].

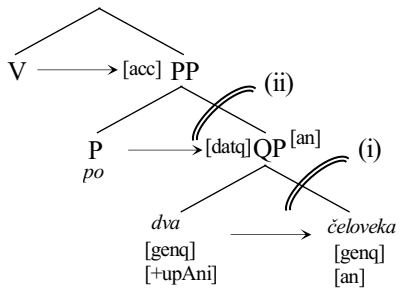
As discussed in subsection 3.3.2.3, when in an accusative environment, NPs headed by an animate noun and an inanimate noun behave differently. Preassigned GenQ on PcQ and *po* as a DatQ assigner correctly predict the morphological behavior of *po*-phrases in an accusative environment.

(82) (a) Puskajut tol'ko po dva čeloveka. (RNC 10.08.2020)
let_go-pr.3.pl only dist two-genq.pc person-genq.pc
"They let only two persons go for each."

(b) (...) vse deržali daže po dve ruki (...) (RNC 10.08.2020)
all-nom.pl hold-pa.pl even dist two-genq.pc.+f hand-genq.pc.+f
"Everybody held even two hands for each."

In (82), N in (a) is an animate noun, and in (b), inanimate. The *po*-phrases in both examples are in accusative environment, but their morphological behavior is the same despite the difference in animacy.

(83)



There are two case boundaries in the tree in (83): (i) is below QP and (ii) is above QP. Because *dva* has [+upAni], the feature [an] can go across the boundary (i) up to the node QP. However, there are no features that allow [an] to cross the boundary (ii). Thus, nothing occurs to [acc] assigned by V to PP, whether the N is animate or not. Moreover, [datq] assigned to QP cannot percolate down to the terminal nodes, for to *čeloveka* GenQ is assigned by *dva*, and *dva* has preassigned GenQ lexically. Thus, my hypothesis correctly predicts the morphological forms of *po*-phrases in accusative environments.

4.6.2. Other Qs That Have Preassigned GenQ

Thus far, I have discussed only simplex numerals; however, other types of Qs also can have undergone (or can be undergoing) the change.

In (84), I present examples of collective numerals.

(84) V každoj komnate pomeščalos' po dvoe čelovek. (Crockett 1976: 157)
in each room-loc be-pa.n dist two-nom/acc person-genq.pl
"There were two people in each room."

[23] In Russian, there are some other prepositions that can govern QP, and can be used only in nominative and accusative environments, e.g., *okolo* "about", *do* "up to", *ot* "from". Babby (1985b) calls this type of prepositions "prepositional quantifiers".

In (84), a collective numeral *dvoe* shows a Direct pattern, rather than an Oblique pattern. To incorporate this descriptive fact into the preassigned GenQ hypothesis, *dvoe* must have preassigned GenQ. In section 3, I argued that Collective numerals assign GenQ as PcQs and HQs do. If I can assume that being a GenQ assigner is related to having preassigned GenQ, it seems natural for collective numerals to have preassigned GenQ[24].

Moreover, PcQ *poltora* "one and half" assigns GenQ to N and also shows Direct pattern:

(85) (...) sidet' po poltora časa (...) (RNC 10.08.2020)
sit-inf dist one_and_half-nom/acc hour-genq.pc
"to sit for one and half hours for each"

Perhaps it also seems natural here to assume that GenQ assigners tend to have preassigned GenQ.

Indefinite quantifiers, for example, *mnogo* "many", *neskol'ko* "some" also assign GenQ to N. They are often reported to have both Direct and Oblique variants:

(86) po neskol'ko / neskol'ku dnej (Švedova et al. 1980: I: 580)
dist some-nom/acc some-nom/acc day-genq.pl
"some days for each"

The former *neskol'ko* is in Direct form, and the latter *neskol'ku* is in Oblique form (seemingly, DatQ, although this form is used only in limited environments). Graudina et al. (1976: 267), Švedova et al. (1980: I: 580), and Rozental' (1998: 158) have stated that compared with each other, the Direct pattern is more colloquial and Oblique pattern is more literary. If I can say for sure that colloquial variants are newer than literary variants, these indefinite quantifiers show the same pattern as HQs: compared with each other, the Direct pattern is newer and the Oblique pattern is older. These ideas suggest that indefinite quantifiers such as *mnogo*, and *neskol'ko*, which assign GenQ to N, later acquired preassigned GenQ.

Thus, my hypothesis on preassigned GenQ can be spread over other quantifiers, which assign GenQ to N.

5. Concluding Remarks and Further Scope

In this brief discussion I have discussed some aspects of interrelations between grammatical features in QP. In sections 1 and 2, my earlier works and their validity were reviewed. In section 3, to resolve the unsolved problems of my earlier works, I postulated that PcQs have preassigned GenQ in the lexicon, and showed that this hypothesis does not contradict my theoretical framework proposed in my earlier work. Furhter, in section 4, I assumed that preassigned GenQ has spread, or is spreading to HQs. This assumption is valid to resolve the very complicated morphological problem of *po*-phrase. As a result, (11) should be revised to the following:

[24] Inoue (2019: 54–56) stated that collective numerals in OR agreed in case with N throughout the paradigm, and that they started to show the same case pattern as in MR in the 18th century, when the morphology of PcQs had stabilized in the present state (See also Mitani 1998: 25).

(87)

	1	2	3, 4	5〜	100	1,000	1,000,000
number	[ø]	[pc]	[pc]	×	×	[sg/pl]	[sg/pl]
gender	[ø]	[ø]	×	×	×	[f]	[m]
animacy	[ø]	[ø]	[ø]	[in]	[in]	[in]	[in]
inflectional type	×	×	×	[III]	[IV]	[II]	[I]
case	[ø]	[genq]	[genq]	[ø/genq]	[ø/genq]	[ø]	[ø]

There remain further problems, to be solved in further research, except for the problems I have mentioned in my discussions:

My preassigned GenQ hypothesis implies that the morphological paradigm of PcQs and HQs does not have nominative or accusative form. According to my discussion, the morphological paradigms of *dva* "two" and *pjat'* "five" are as follows:

(88)

Nom		
Acc		
GenQ	dva/dve	pjat'
Gen	dvux	pjati
Loc	dvux	pjati
Dat	dvum	pjati
Ins	dvumja	pjat'ju

In summary, these Qs have paradigmatic gaps. However, it is not unnatural to assume paradigmatic gaps for some lexical items. For example, the anaphoric pronoun *sebja* "oneself" and reciprocal pronoun *drug druga* "each other" do not have nominative form because they can never appear in a nominative environment. Zaliznjak (2008: 451) stated that indefinite quantifier *malo* "few" has only a nominative/accusative form. Further, Sims (2017) demonstrated many instances of Russian verbal gaps.

Moreover, PcQ *oba* "both" has one peculiarity that other PcQs do not have: it morphologically marks gender opposition even in Lexical cases.

(89) (a) k oboim synov'jam (RNC 16.08.2020)
to both-dat.–f son-dat.pl
"to both sons"

(b) k obeim dočerjam (RNC 16.08.2020)
to both-dat.+f daughter-dat.pl
"to both daughters"

Vinogradov (1972: 236)[25] stated that gender opposition on this PcQ is disappearing, and is somewhat "artificial". Perhaps, gender opposition in Lexical cases is vanishing, because the system of Russian does not tolerate this grammatical peculiarity. By contrast, Graudina et al. (1976: 256) and Bel'čikov (2008: 182) have stated that the variants that do not differentiate gender are colloquial, not prescriptively permitted. Furhter, in the research of Asuka Mitsui (p.c.), no single example of *oba* not differentiating [±f] was attested.

These unsolved problems must be studied in detail in further research.

[25] Vinogradov (1972) is a second edition. The first edition was published in 1947.

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